ICF-2001D/2010

SERVICE MANUAL

ICF-2001D:
AEP Model
UK Model
E Model
AUS Model
ICF-2010:
US Model
Canadian Model

ICF-2010 shown.

SPECIFICATIONS

Circuit system	FM: Superheterodyne AIR/AM: Dual conversion superheterodyne
Frequency range	AIR: 116 – 136 MHz (Except Middle Easts, Saudi Arabia, UK, Denmark, Finland, Norway, Federal Republic of Germany) FM: 76 – 108 MHz ((US, Canadian, E (Except Middle Easts, Saudi Arabia), AEP (Except Federal Republic of Germany, France, Denmark, Norway and Finland), UK, AUS)) 87.5 – 108 MHz (E (Middle Easts, Saudi Arabia), AEP (France, Denmark, Norway, Finland, Federal Republic of Germany)) AM: 150 – 29999.9 kHz (US, Canadian, E (Except Middle Easts, Saudi Arabia), AEP (Except Federal Republic of Germany), AUS, UK) 150 – 26,100 kHz(E (Middle Easts), AEP (Federal Republic of Germany)) 150 – 285 kHz and 530 – 26,100 kHz (E (Saudi Arabia))
Antennas	AIR/FM/SW: Telescopic antenna MW/LW: Built-in ferrite bar antenna External antenna terminal for AIR/FM as appropriate External antenna terminal for AM (LW/MW/SW)
Speaker	Approx. 10 cm (4 inches) diameter
Power output	380 mW (at 10% harmonic distortion)
Outputs	Recording output jack (minijack) Output level 0.775 mV (–60 dB) Output impedance 1 kilohm Earphone jack (minijack)
Power requirements	Radio: 4.5 V dc Three size D batteries (IEC designation R20) DC IN 4.5 V jack accepts: • Supplied ac power adaptor for use on 120 V ac, 60 Hz • Optional DCC-127A car battery cord for use with 12 V car battery (Except AUS) Computer/clock: 3 V dc, two size AA batteries (IEC designation R6)
Battery life	Radio: Approx. 40 hours (FM reception) Approx. 30 hours (AM/AIR reception) using Eveready No. 1250 batteries Computer/clock: Approx. 1 year using Eveready No. 1015 batteries The battery life assumes listening to the radio for four hours a day at normal volume

–Continued on page 2–

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY SHADING AND MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE TRAME ET UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

MICROFILM

AIR/FM/LW/MW/SW PLL SYNTHESIZED RECEIVER

SONY®

TR

Dimensions	Approx: 288 x 159 x 52 mm (w/h/d) (11 3/8 x 6 3/8 x 2 1/8 inches) incl. projecting parts and controls with antenna retracted
Weight	Approx. 1.7 kg (3 lb 12 oz) incl. batteries

The ICF-2001D/2010 is available in various models with differences in tuning bands and frequencies, etc., corresponding to the regulations of different countries.

The main differences are as follows. Please check the type of your unit with respect to each item.

The AM and FM frequency ranges are indicated on the front panel of your unit. For other items, compare your unit with the photos on page 3 and the explanations of "LOCATION AND FUNCTION OF CONTROLS".

Item	Type	Description
AM frequency range	1	150 - 29,999.9 kHz
	2	150 - 26,100 kHz
	3	150 - 285 kHz and 530 - 26,100 kHz
FM frequency range	1	76 - 108 MHz
	2	87.5 - 108 MHz
AIR band (116 - 136 MHz)	1	Provided
	2	Not provided (No AIR key)
SSB reception	1	Provided
	2	Not provided (No USB and LSB/CW keys)
External antenna terminals	1	Provided
	2	Not provided

Despite the above differences, the operating procedure of all the units are identical. The differences are clearly described in the text as required.

The photos and illustrations used in this manual represent a typical model.

WARNING

To prevent fire or shock hazard, do not expose the set to rain or moisture.

To avoid electrical shock, do not open the cabinet. Refer servicing to qualified personnel only.

Notice for the customers in the United Kingdom
IMPORTANT

The wires in the mains lead of the supplied ac power adaptor are coloured in accordance with the following code:

Blue: Neutral
Brown: Live

As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug proceed as follows:

The wire which is coloured blue must be connected to the terminal which is marked with the letter N or coloured black.

The wire which is coloured brown must be connected to the terminal which is marked with the letter L or coloured red.

> The MW scanning interval is preset at the factory to 9 kHz. If you use the receiver where the frequency allocation system is based on a 10 kHz interval, such as in the U.S.A. and Canada, change the MW scanning interval following the procedure on page 15.

FEATURES

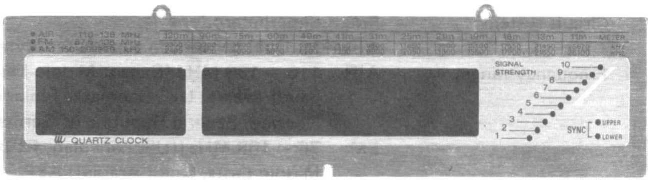
- An FM/LW/MW/SW portable receiver with worldwide band coverage. With certain models, the AIR band* can be also received.
- Quartz controlled PLL (Phase Locked Loop) synthesizer system using a microcomputer makes pinpoint tuning easy.
- Smooth tuning with rotary manual tuning knob.
- Synchronous detector circuit reduces interference from adjacent stations (beats) and distortion due to fading in AM reception.
- Choice of direct, manual, scan, memory or memory scan tuning.
- Up to 32 stations can be memorized for instant tuning at the press of a key. AM mode can also be memorized.
- Programmable timer turns the receiver on and off automatically up to four times a day.
- Sleep timer turns the receiver off automatically after 60, 30 or 15 minutes.
- Three different radio power sources: internal batteries, house current or car battery.

*** AIR band**
The AIR band covers the air traffic control frequencies. You can monitor aviation communications between aircraft and airport towers, such as a pilot's request for instructions, a report of his position, and filing of his flight plans.

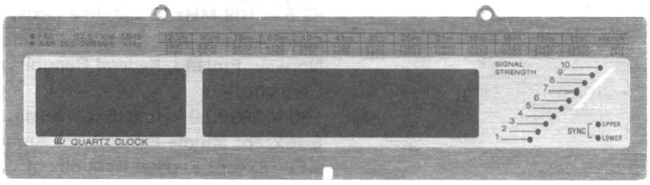
MODEL IDENTIFICATION

– LCD Indication Plates –

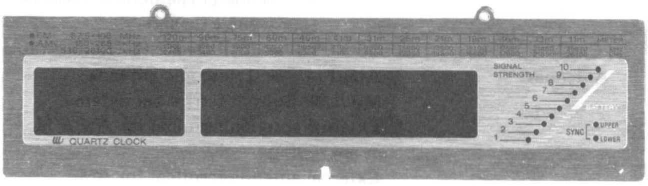
AEP Model: France



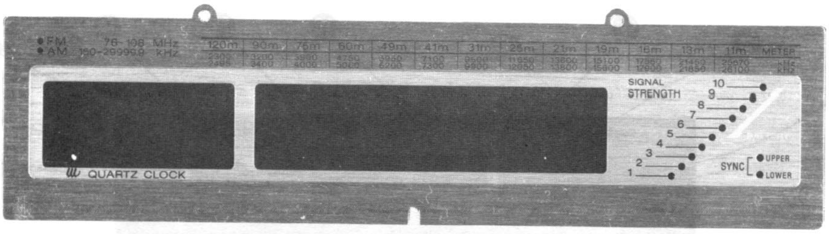
AEP Model: Denmark, Finland, Norway

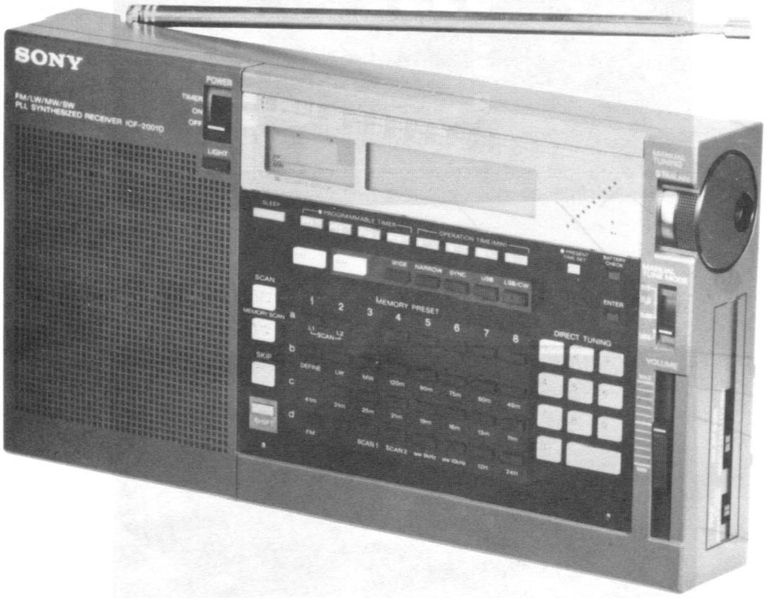


E Model: Saudi Arabia



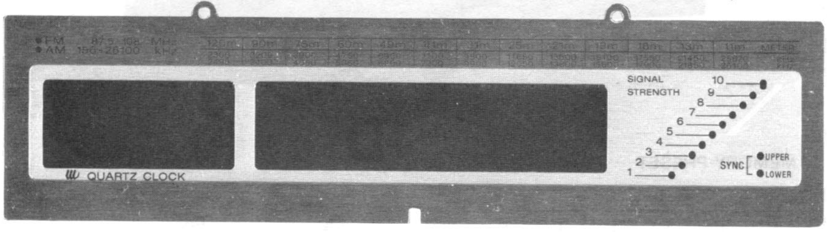
UK Model:

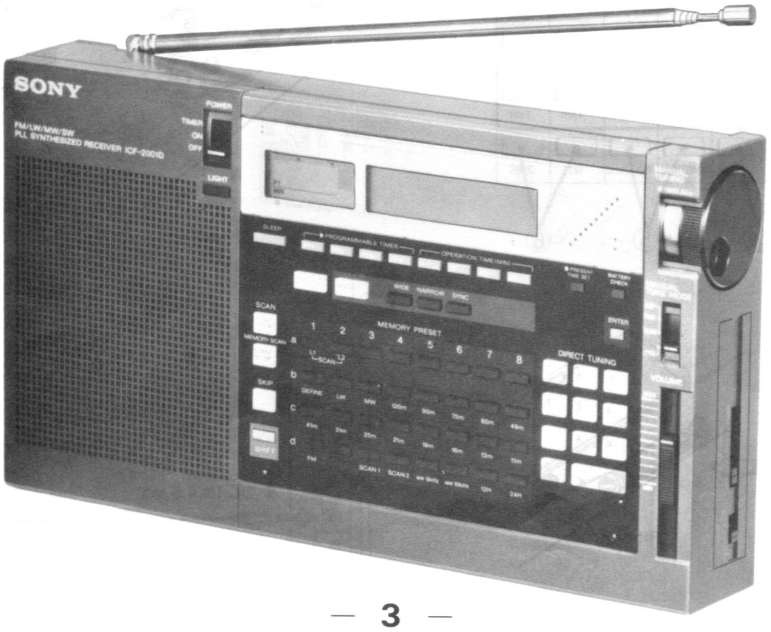

FM 76–108 MHz
AM 150–29999.9 KHz
SIGNAL STRENGTH
QUARTZ CLOCK
SYNC UPPER LOWER
METER


SONY
FM/LW/MW/SW PLL SYNTHESIZED RECEIVER ICF-2001D
POWER
TIMER
ON
OFF
LIGHT
SCAN
MEMORY SCAN
SKIP
SHIFT
MEMORY PRESET
DIRECT TUNING
VOLUME
ENTER

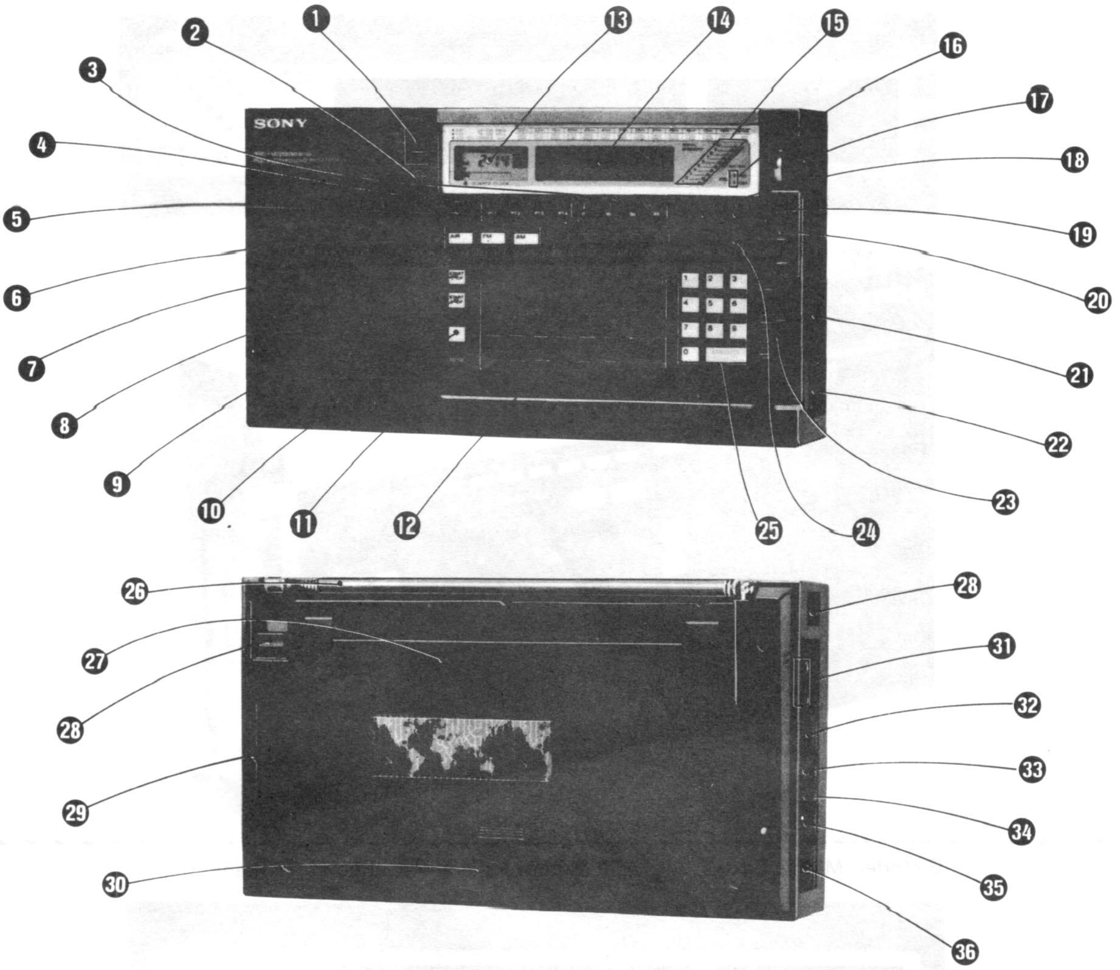
* * *

E Model: Middle Easts AEP Model: Federal Republic of Germany

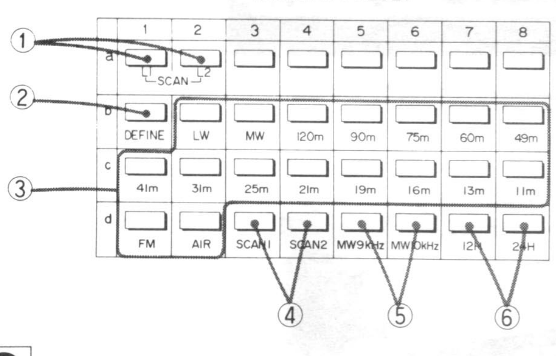

FM 87.5–108 MHz
AM 150–29999.9 KHz
SIGNAL STRENGTH
QUARTZ CLOCK
SYNC UPPER LOWER


SONY
FM/LW/MW/SW PLL SYNTHESIZED RECEIVER ICF-2001D
POWER
TIMER
ON
OFF
LIGHT
SCAN
MEMORY SCAN
SKIP
SHIFT
MEMORY PRESET
DIRECT TUNING
VOLUME
ENTER

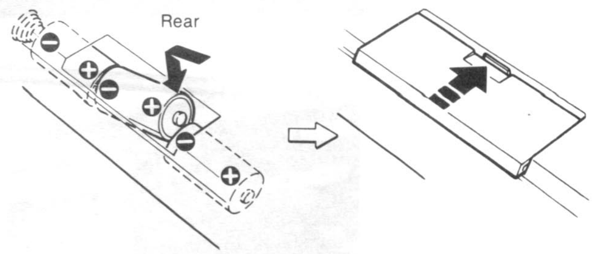
A


SONY
❶
❷
❸
❹
❺
❻
❼
❽
❾
❿
⓫
⓬
⓭
⓮
⓯
⓰
⓱
⓲
⓳
⓴
(21)
(22)
(23)
(24)
(25)
(26)
(27)
(28)
(29)
(30)
(31)
(32)
(33)
(34)
(35)
(36)

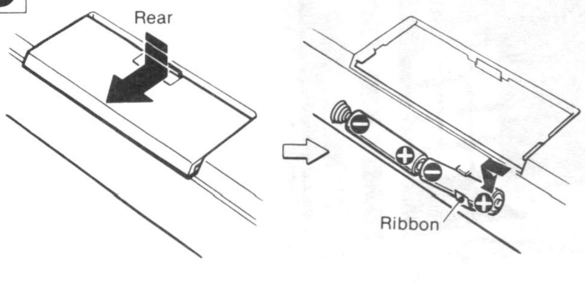
B


MEMORY PRESET
1
2
3
4
5
6
7
8
a
b
c
d
SCAN
DEFINE
LW
MW
120m
90m
75m
60m
49m
41m
31m
25m
21m
19m
16m
13m
11m
FM
AIR
SCAN1
SCAN2
MW9KHz
MW10kHz
12H
24H
①
②
③
④
⑤
⑥

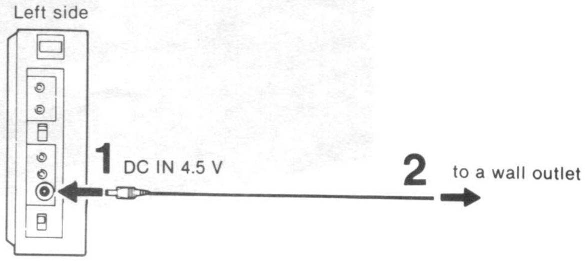
D


Rear

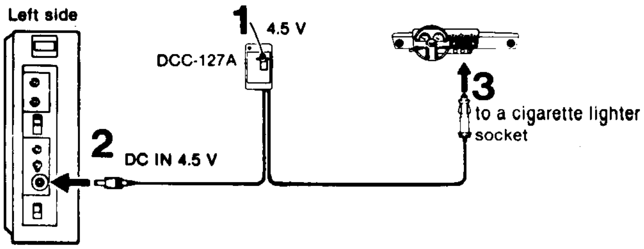
C


Rear
Ribbon

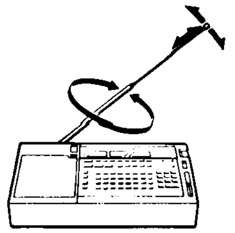
E


Left side
1 DC IN 4.5 V
2 to a wall outlet

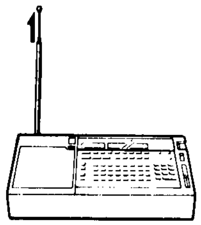
F


Left side
1
4.5 V
DCC-127A
2
DC IN 4.5 V
3
to a cigarette lighter socket

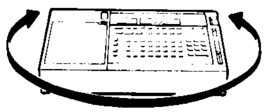
G-1



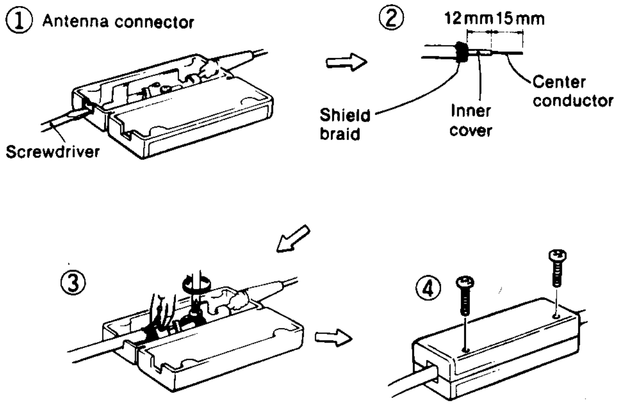
G-2



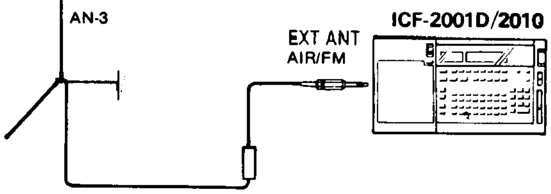
G-3



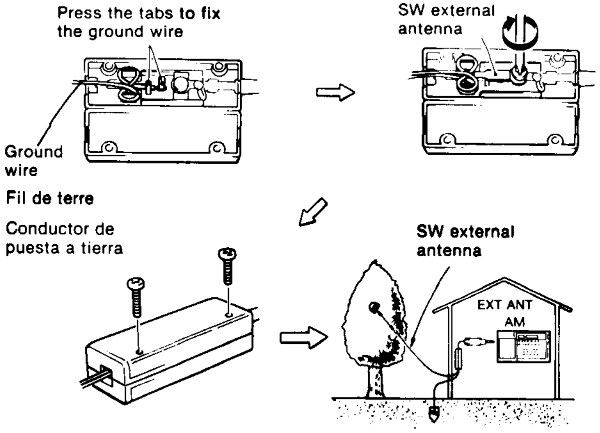
H-1


① Antenna connector
Screwdriver
②
12mm
15mm
Shield braid
Inner cover
Center conductor
③
④

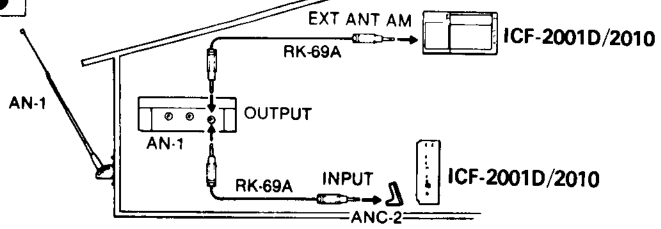
H-2


AN-3
EXT ANT AIR/FM
ICF-2001D/2010

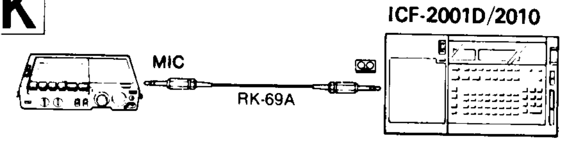
I


Press the tabs to fix the ground wire
Ground wire
Fil de terre
Conductor de puesta a tierra
SW external antenna
SW external antenna
EXT ANT AM

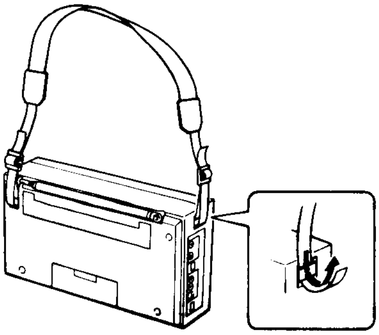
J


AN-1
EXT ANT AM
RK-69A
ICF-2001D/2010
OUTPUT
AN-1
RK-69A
INPUT
ICF-2001D/2010
ANC-2

K


ICF-2001D/2010
MIC
RK-69A

L



LOCATION AND FUNCTION OF CONTROLS

See photos [A] on page 4

① POWER switch
After setting the MAIN POWER switch ㊱ to ON, set to ON to turn on the receiver. To turn the receiver off, set to OFF. To activate the programmable timer, set to TIMER.

② LIGHT key
Press to illuminate the display windows for approximately 15 seconds. If any key on the front panel is pressed or the MANUAL TUNING/TIME ADJ knob ⑰ is turned, the illumination will remain for another 15 seconds from that point. The illumination will go off automatically 15 seconds after the last key is pressed.

③ OPERATION TIME keys (page 16)
To set the operation time of the programmable timer, keeping a PROGRAMMABLE TIMER key ④ pressed, press the 0, 15, 30 or 60 (minute) key.

④ PROGRAMMABLE TIMER keys (page 16)
Keeping one of these keys pressed, set the turn-on time, the operation time, and the station to be turned on (the MEMORY PRESET key) by the programmable timer. Four different timer programs can be set on the four PROGRAMMABLE TIMER keys.

⑤ SLEEP timer key (page 15)
Press to set the operation time of the sleep timer.
Press this key repeatedly until the desired time, 60, 30 or 15 (minutes), is displayed.

⑥ Band select keys
Select the desired band.
AIR: For air band reception (not provided with certain models).
FM: For FM reception.
AM: For LW, MW and SW reception.

⑦ AM mode select keys (page 10)
Select the appropriate AM mode according to the type of broadcasting and receiving conditions.
(With certain models, USB and LSB/CW keys are not provided.)

⑧ SCAN START/STOP key (page 12)
Press to start and stop scanning.

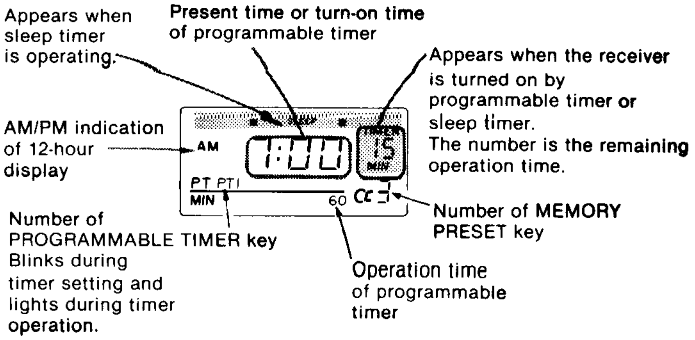
⑨ MEMORY SCAN START/STOP key (page 14)
Press to start and stop memory scanning.

⑩ SKIP key (page 14)
Used to designate the memorized stations to be skipped during memory scanning.

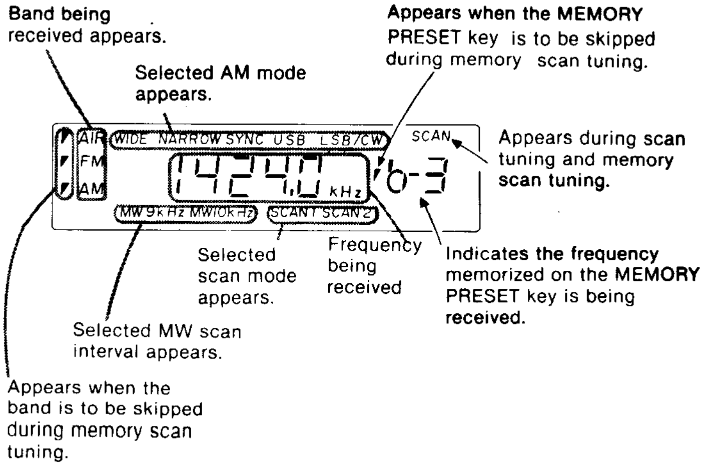
⑪ SHIFT key
To activate the second function of the MEMORY PRESET keys (indicated below the keys in blue), keeping this key pressed, press the required MEMORY PRESET key. (See "Second function of the MEMORY PRESET keys" on page 7)

⑫ MEMORY PRESET keys
One station (its frequency and AM mode) can be memorized with each MEMORY PRESET key. To memorize a station, keeping the ENTER key ㉔ pressed, press a MEMORY PRESET key.
Most of the MEMORY PRESET keys are dual function. To activate the second function, keeping the SHIFT key ⑪ pressed, press the MEMORY PRESET key. See "Second function of the MEMORY PRESET keys" on page 7.

⑬ Clock/timer display
Normally the present time is displayed. When the PROGRAMMABLE TIMER key ④ is pressed, the timer program is displayed. When the sleep timer is operating, the operation time of the sleep timer is displayed.


Appears when sleep timer is operating.
Present time or turn-on time of programmable timer
Appears when the receiver is turned on by programmable timer or sleep timer. The number is the remaining operation time.
AM/PM indication of 12-hour display
AM
SLEEP
1:00
TIMER
15
MIN
PT PTI
MIN
60
Number of PROGRAMMABLE TIMER key Blinks during timer setting and lights during timer operation.
Operation time of programmable timer
Number of MEMORY PRESET key

⑭ Frequency display
Displayed as follows.


Band being received appears.
Selected AM mode appears.
Appears when the MEMORY PRESET key is to be skipped during memory scan tuning.
AIR
FM
AM
WIDE NARROW SYNC USB LSB/CW
SCAN
14240.0 kHz
6-3
MW 9kHz MW10kHz
SCAN1 SCAN2
Appears during scan tuning and memory scan tuning.
Selected scan mode appears.
Frequency being received
Indicates the frequency memorized on the MEMORY PRESET key is being received.
Selected MW scan interval appears.
Appears when the band is to be skipped during memory scan tuning.

⑮ SIGNAL STRENGTH/BATTERY indicator
Shows the strength of the tuned signal. The more LEDs illuminated, the better the tuning. While the BATTERY CHECK key ⑲ is pressed, this indicator shows the battery condition.

⑯ SYNC (synchronous detection) indicators (page 11)
When a signal is received with AM mode set to SYNC, one of the SYNC indicators lights to show the sideband selected by the synchronous detector circuit.
Fine tune to the best possible reception with the MANUAL TUNING knob⑰, monitoring the SYNC indicators.

⑰ MANUAL TUNING/TIME ADJ knob
For manual tuning, turn this knob to tune in a frequency. To set the clock, keeping the PRESENT TIME SET key ⑱ pressed, turn this knob. To set the turn-on time of the programmable timer, keeping the PROGRAMMABLE TIMER key ④ pressed, turn this knob.

⑱ PRESENT TIME SET key
To set the clock, keeping this key pressed, turn the MANUAL TUNING/TIME ADJ knob ⑰.

⑲ BATTERY CHECK key
To check the battery condition, keeping this key pressed, monitor the SIGNAL STRENGTH/BATTERY indicator ⑮.

⑳MANUAL TUNE MODE selector (page 10)
When this selector is set to FAST, AM frequency is changed by 1 kHz intervals by turning the MANUAL TUNING/TIME ADJ knob ⑰. When the selector is set to SLOW, AM frequency is changed by 0.1 kHz intervals. When the selector is set to LOCK, the frequency of all the bands will not change even if the MANUAL TUNING/TIME ADJ knob is turned. (Clock and timer settings can be made.)

㉑AM RF GAIN control
Normally set to MAX. When the sound of an AM station is distorted due to strong signals, slide it towards MIN. During scan tuning, adjust the stop level of scanning with this control.

㉒TONE selector
Set to the appropriate position according to the program or to your preference.
HIGH: For more treble.
LOW: For less treble.
NEWS: For listening to news.

㉓VOLUME control
Slide towards MAX for more volume.

㉔ENTER key
Used to memorize a station. After tuning in a frequency and selecting AM mode, keeping this key pressed, press a MEMORY PRESET key.

㉕DIRECT TUNING keys
For direct tuning, input a frequency with the keys 0 9 and then press the EXECUTE key.

㉖Telescopic antenna (page 11)
Used for FM, SW and AIR band reception.

㉗Stand
Press the part marked [PUSH UP] to raise the stand. To lower it, press the same part again.

㉘Loops for shoulder strap

㉙Information plate
Pull out the plate to the left to remove, stick the supplied memo sheet on the front side and the supplied information sheet on the rear and replace the plate.
When referring to the information, slide it out as required.

㉚Battery compartment (page 8)
Install the computer/clock batteries and radio batteries.

㉛EXT ANT (external antenna) jacks (page 17)
(Not provided with certain models)
Connect the supplied SW external antenna or an optional external AM antenna to the EXT ANT AM jack. Connect an optional external antenna for FM and AIR reception to the EXT ANT FM/AIR jack.

㉜AM ATT (AM attenuator) selector
Used for AM reception. Normally set to DX. When receiving a strong signal, or at night when it is difficult to pick up a weak signal because of interference from many other signals, set to LOCAL.

㉝ 📼 (recording output) jack.
Used to record broadcast programs with a tape recorder.

㉞ 🎧 (earphone) jack (minijack)
Connect an earphone or stereo headphones.
When a plug is inserted into this jack, the built-in speaker is disconnected automatically.
When the stereo headphones are connected, the sound is heard in monaural.

㉟DC IN 4.5V (external power input) jack
Connect an ac power adaptor or car battery cord.

㊱MAIN POWER switch
Set to ON to turn on the receiver.
When carrying the receiver, set it to OFF to prevent the receiver from turning on accidentally. When this switch is set to OFF, only the clock operates.

SECOND FUNCTION OF THE MEMORY PRESET KEYS

Most of the MEMORY PRESET keys are dual function.
The first function is frequency memorization, and the second is indicated in blue below the key.
To use the second function, keeping the SHIFT key pressed, press the MEMORY PRESET key.
See illustration [B] on page 4.

①L1/L2 SCAN (scan range check) keys
Keeping the SHIFT key pressed, press the L1 key or the L2 key, and the lowest frequency or the highest frequency of the preset scan range appears on the frequency display.

②DEFINE scan key (page 12)
To scan between the frequencies memorized on the a-1 key and the a-2 key, keeping the SHIFT key pressed, press this key.

③Band scan keys
To select the factory-preset scan range, which is a conventional broadcast band, keeping the SHIFT key pressed, press the corresponding key. The frequency range of each broadcast band is indicated on page 13.

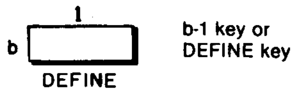
④Scan mode select keys
Keep the SHIFT key pressed and press the SCAN 1 key. Scanning will stop automatically when a signal is received.
Keep the SHIFT key pressed and press the SCAN 2 key. Scanning will stop for 1.5 seconds when a signal is received, and will then resume automatically.

⑤MW scan interval select keys (page 12)
Set the MW scan interval to 9 kHz or 10 kHz according to the MW frequency allocation system of your country.

⑥Hour display format select keys (page 9)
Select either 12 hour display or 24 hour display.

The MEMORY PRESET key is illustrated and described as follows in the text of this manual.

Ex. ② DEFINE scan key



COMPUTER/CLOCK BATTERIES

These batteries are used to operate the clock, displays, and microcomputer which controls the receiver and retains the memory. Be sure to keep the batteries installed even when the receiver is operating on other power sources than the radio batteries.

Battery installation
Insert two size AA batteries (IEC designation R6) with correct polarity, following illustration C on page 4.

As soon as the batteries are installed, 0:00 will appear on the clock display and the clock begins to operate.

Battery life
About one year of operation can be expected when using Eveready No. 1015 batteries. This assumes listening for four hours a day at normal volume.
When the computer/clock batteries are exhausted, the displays may become faint.

Replacement of the batteries
Be sure to replace both computer/clock batteries once a year to avoid damage from leaking batteries.
Once the batteries are removed, the memorized frequencies and timer programs are erased and the clock setting is cancelled. Be sure to memorize or set these contents again after replacing the computer/clock batteries.

Note
When the air is especially dry, the following may be caused by static electricity, but there is no cause for alarm:

- The indication in the clock/timer display and the frequency display disappears.
- Irregular figures appear in the clock/timer display and the frequency display.
- The indication preset at the factory—0:00 or AM 150.0 kHz—appears in the clock/timer or frequency display.
- Frequencies cannot be tuned in.

If any of these things happens, set the MAIN POWER switch to OFF, and reset to ON. If the problem persists, remove and re-install the computer/clock batteries.

RADIO POWER SOURCES

For receiver operation, the computer/clock batteries and one of the following three radio power sources are necessary.

RADIO BATTERIES

Battery installation
Insert three IEC designation R20 batteries (size D) with correct polarity, following illustration D on page 4.

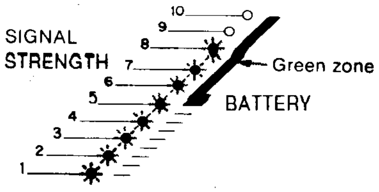
- The set cannot be operated on the internal batteries when the ac power adaptor or car battery cord is connected to the set.
- When the set is not to be used for a long period of time or is to be operated extensively on other power sources, remove the batteries to avoid damage caused by battery leakage and corrosion.

Battery life
You can expect Sony SUM-1(NS) New Super batteries to last for approx. 32 hours for AM/AIR reception and approx. 45 hours for FM reception. This assumes listening for four hours a day at normal volume.

To check the battery condition

1 Set the MAIN POWER switch and the POWER switch to ON.
2 Keeping the BATTERY CHECK key pressed, monitor the SIGNAL STRENGTH/BATTERY indicator. If the LEDs do not light up to the green zone, replace all batteries with new ones.

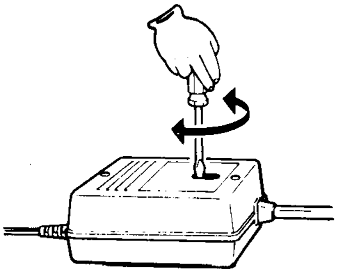
Good condition



- When the batteries are exhausted, the sound becomes weak or distorted.

HOUSE CURRENT (except the model available in Australia)
Use the supplied ac power adaptor. The adaptor operates on either 110 (99–121)*, 120 (108–132), 220 (198–242) or 240 V (216–264 V) ac, 50/60 Hz.
* Range of voltage allowable shown in parentheses.

1 Before connecting the adaptor to a wall outlet, be sure to check whether the input selector is correctly set to your local power line voltage. If necessary, turn the selector with a screwdriver so that you can see the proper voltage figure.



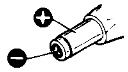
2 Connect the adaptor as in illustration E on page 4.

12 V CAR BATTERY
Connect the Sony DCC-127A car battery cord (optional) as in illustration F on page 5.

- Before connecting, be sure to read the instruction manual for the car battery cord.
- Reception may be affected by ignition noise while the engine is in operation.

Notes

- When the ac power adaptor or car battery cord is connected to the DC IN 4.5 V jack, the internal radio batteries (if present) are automatically disconnected.
- If a car battery cord or an ac power adaptor not manufactured by Sony is used, a fuse must be installed in the battery cord or the ac power adaptor and the polarity of the plug must be as illustrated.

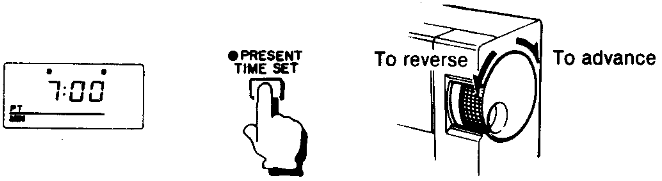


CLOCK SETTING

When the computer/clock batteries are installed, the clock begins to operate from 0:00.

To set the clock

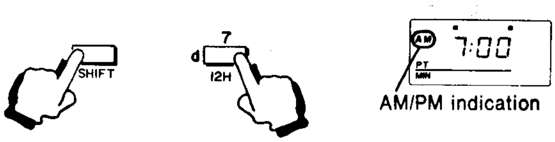
1. Keeping the PRESENT TIME SET key pressed, turn the MANUAL TUNING/TIME ADJ knob so the display shows present time.
2. As soon as you hear the time signal on the telephone, radio or TV, release the PRESENT TIME SET key.
   The clock will then begin to operate, showing the precise time of day.


7:00
PT
●PRESENT TIME SET
To reverse
To advance

To change the hour display format

The hour display format of the clock is preset at the factory to 24-hour display. You can change to a 12-hour display as follows:

1. Set the MAIN POWER switch and the POWER switch to ON.
2. Keeping the SHIFT key pressed, press the 12H key.


SHIFT
7
d
12H
AM
7:00
PT
AM/PM indication

Check the AM/PM indication.
AM 12:00 = midnight PM 12:00 = noon

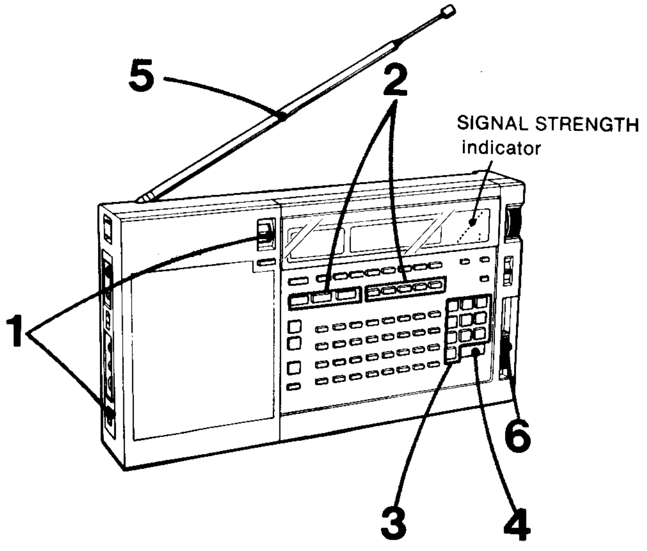
●To reset to the 24-hour display, keeping the SHIFT key pressed, press the 24H key.

●Once the computer/clock batteries are removed, the 24-hour display is automatically selected.

DIRECT TUNING

If you know the frequency of a station to be received, you can tune in the station easily by direct tuning.

The numbers in the illustration refer to the sequence of operations.

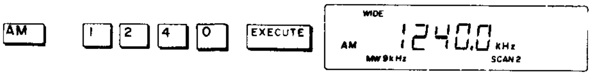

5
2
SIGNAL STRENGTH indicator
1
6
3
4

1. Set the MAIN POWER switch and the POWER switch to ON.
2. Select the desired band.
   For AM reception, select the required AM mode.
   (See "How to select AM mode" on page 11.)
3. Input the frequency of the station to be received with the 0-9 keys.
4. Press the EXECUTE key.
5. Adjust the telescopic antenna for FM/SW/AIR reception.
   Rotate the set for improved LW/MW reception. See page 11.
6. Adjust the volume with the VOLUME control.

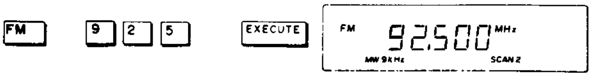
After listening, set the POWER switch to OFF.

HOW TO INPUT A FREQUENCY

Example
AM 1,240 kHz


AM
1
2
4
0
EXECUTE
WIDE
AM
1240.0
KHz
MW 9kHz
SCAN 2

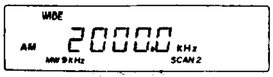
FM 92.5 MHz


FM
9
2
5
EXECUTE
FM
92.500
MHz
MW 9kHz
SCAN 2

To input a frequency whose righthand digits are all 0

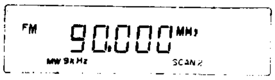
AM 2,000 kHz

AM 2 EXECUTE



FM 90.0 MHz

FM 9 EXECUTE



In case of 10,000 kHz and 20,000 kHz, however, press 1 0 EXECUTE, and 2 0 EXECUTE, respectively.
In case of 200 kHz, 300 kHz, ... 900 kHz, press 2 0 0 EXECUTE; 3 0 0 EXECUTE, etc.

- After pressing a key, press the next key within 5 seconds. If you do not, the previous station will return.
- With direct tuning, the frequency is displayed in steps of the following intervals, depending on the bands.

AM: 1 kHz
FM: 0.05 MHz
AIR: 0.025 MHz

If you input a frequency between the intervals, the frequency at the interval just below will be tuned in and displayed. For example, if you input FM 92.540 MHz, FM 92.500 MHz will be tuned in and displayed.

Error indication

Error.1

When you input a frequency beyond the receivable frequency range, this indication will blink several times and the previous station will return. ➡ Input a correct frequency.

Error.3

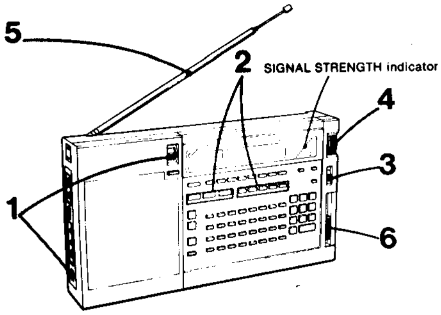
If you set the POWER switch to ON or press the SLEEP key when there is no radio power source, this indication will appear for approx. 5 seconds and then disappear.
➡ Check the following.

- The MAIN POWER switch is set to OFF.
- The radio batteries are exhausted.
- The ac power adaptor or the car battery cord is connected to the DC IN 4.5 V jack when battery operation is attempted.
- The ac power adaptor or the car battery cord is not connected correctly to a wall outlet or a cigarrette lighter socket of a car.

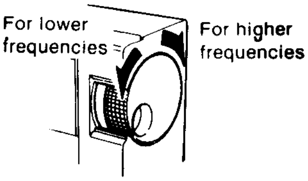
MANUAL TUNING

Use manual tuning when you do not know the frequency of the station you want to tune in, or when you want to tune in a station more precisely after scan tuning.

The numbers in the illustration refer to the sequence of operations.



1 Set the MAIN POWER switch and the POWER switch to ON.
2 Select the desired band.
For AM reception, select the required AM mode.
(See "How to select AM mode" on page 11.)
3 Set the MANUAL TUNE MODE selector to SLOW or FAST.
4 Turn the MANUAL TUNING knob to tune in a desired station so that more LEDs of the SIGNAL STRENGTH indicator light.



FM
92.500
MHz
MW 9kHz
SCAN 2

As the MANUAL TUNING knob is turned, the frequency is tuned in and displayed at the following intervals, depending on the bands.

AM: 0.1 kHz (with the MANUAL TUNE MODE selector set to SLOW)
1 kHz (with the MANUAL TUNE MODE selector set to FAST)
FM: 0.05 MHz
AIR: 0.025 MHz

5 Adjust the antenna. See page 11.
6 Adjust the volume with the VOLUME control.

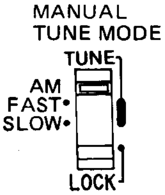
After listening, set the POWER switch to OFF.

Note

When the upper or lower limit of the band frequency is reached, the frequency no longer changes even if the MANUAL TUNING knob is turned further.

How to use the MANUAL TUNE MODE selector

The manual tuning interval of AM frequency can be set with the MANUAL TUNE MODE selector, to 0.1 kHz (at SLOW position) or 1 kHz (at FAST position).
After tuning in a station with the selector set to FAST, tune it in more precisely, setting the selector to SLOW. Once the frequency of any band is precisely tuned, set the selector to LOCK. The frequency no longer changes even if the MANUAL TUNING knob is accidentally turned.



Note

For AM (LW, MW and SW) reception in SYNC, USB or LSB/CW mode, be sure to set this selector to SLOW.

FOR IMPROVED RECEPTION

ANTENNA ADJUSTMENT

For FM/AIR reception

Pull out the telescopic antenna to expose its swivel base and adjust its length, angle and direction for optimum reception. For AIR reception, extending two sections of the antenna is recommended. See illustration G-1 on page 5.

For SW reception

Pull out the telescopic antenna to its full length and set it vertically. See illustration G-2 on page 5.

- If there is a fluorescent lamp just above the set and reception is noisy, incline and shorten the telescopic antenna.

For MW/LW reception

Retract the telescopic antenna. The built-in ferrite bar antenna activates. Since this antenna is directional, rotate the set horizontally for optimum reception, if necessary. See illustration G-3 on page 5.

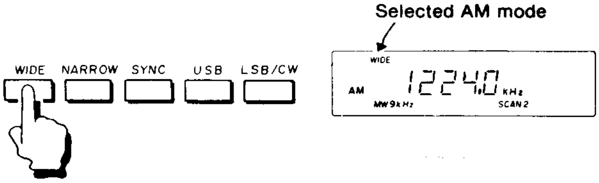
Notes

- If reception is unsatisfactory with the telescopic antenna or the built-in ferrite bar antenna, connect an external antenna*. To connect an external antenna, see page 17.
- In vehicles or in buildings, radio reception may be difficult or noisy. Try listening near a window.
- If the received sound is distorted or noisy, adjust the antenna carefully. For AM reception, set the AM ATT selector to LOCAL.

* With certain models, the external antenna jacks are not provided.

HOW TO SELECT AM MODE

Select the appropriate AM mode according to the broadcast or receiving conditions.



WIDE: Normally set to this mode for wider selectivity.

NARROW: If reception is interrupted or noisy, set to this mode for narrower selectivity. Reception will be improved.

SYNC: If reception is difficult because of beats from adjacent stations or distortion due to fading, which frequently occurs during AM (LW, MW and SW) reception, set to this mode and proceed as in "Tuning using synchronous detection".

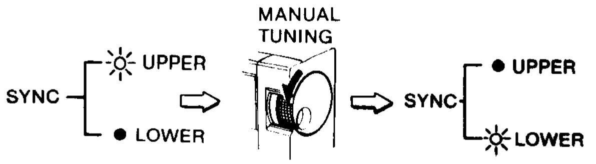
USB: For USB (upper sideband) reception.*

LSB/CW: For LSB (lower sideband) or CW (International Morse Code) reception.*

* With certain models, USB and LSB/CW receptions are not available so these keys are not provided.

TUNING USING SYNCHRONOUS DETECTION

1. Tune in the desired station.
2. Press the SYNC key. The SYNC indication will be displayed and the UPPER or LOWER SYNC indicator will light up.
3. Set the MANUAL TUNE MODE selector to SLOW.
4. Turn the MANUAL TUNING knob slowly so that the other SYNC indicator lights.
   Choose the best possible tuning point, monitoring the received sound.



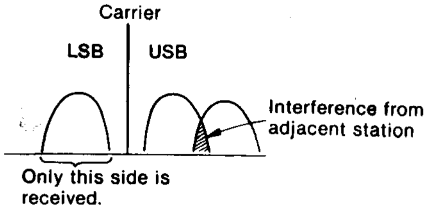
To cancel the SYNC mode, press the SYNC key again. The SYNC indication will disappear.

What is synchronous detection?

There are two big problems in AM reception: distortion due to fading and interference from adjacent stations. The synchronous detection is effective to these problems.

Distortion due to fading is caused by overmodulation, which occurs when a carrier component of the received signal is attenuated on the way. In this receiver, a pure carrier frequency with no level variation, perfectly synchronized with the original carrier, is generated in the synchronous detector circuit and is mixed with the received signal to compensate the attenuated carrier component. In this way, distortion is remarkably reduced.

On the other hand, AM (LW, MW and SW) broadcasting generally uses double-sideband transmission, in which modulated signals are transmitted using both the upper and lower sidebands (USB and LSB). In most cases one of the sidebands is affected by interference from adjacent stations (beats). In the synchronous detector circuit, one of USB and LSB can be received. This allows clear reception without interference from adjacent stations.

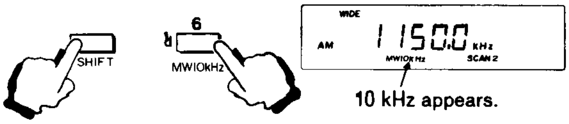

Carrier
LSB
USB
Interference from adjacent station
Only this side is received.

Use scan tuning to automatically scan the stations in the frequency range of a broadcast band or the range which you want. Two scan modes are selectable:
SCAN 1 mode to stop scanning at the first station located, or SCAN 2 mode to stop scanning for 1.5 seconds at each station located.

HOW TO CHANGE THE MW SCANNING INTERVAL

The MW scanning interval is preset at the factory to 9 kHz to match the frequency allocation system of most countries.
If you use the receiver where the frequency allocation system is based on a 10 kHz interval, such as in the U.S.A. and Canada, change the MW scanning interval as follows:

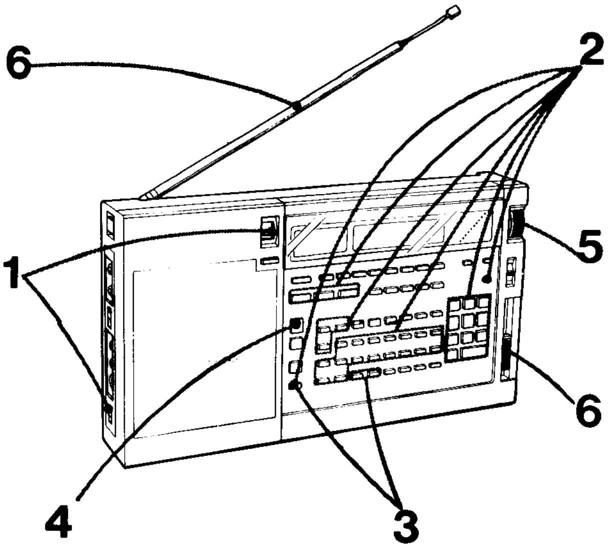
1 Set the MAIN POWER switch and the POWER switch to ON.
2 Keeping the SHIFT key pressed, press the MW 10 kHz key. (To reset to 9 kHz interval, press the SHIFT key and MW 9 kHz key.)


SHIFT
6
b
MWIOkHz
WIDE
AM
1150.0 kHz
MW10kHz
SCAN 2

10 kHz appears.

OPERATION

The numbers in the illustration refer to the sequence of operations.



1 Set the MAIN POWER switch and the POWER switch to ON.
2 Select the broadcast band scan or the DEFINE scan.

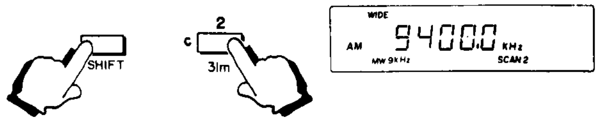
Broadcast band scan

—To scan one of the broadcast bands preset in this receiver (For the frequency range of each band, see the list on page 13.)

Keeping the SHIFT key pressed, press the MEMORY PRESET key with the required band indication, LW through AIR.

Example: SW 31 m band (9,400 - 10,000 kHz)

The lower limit frequency appears.

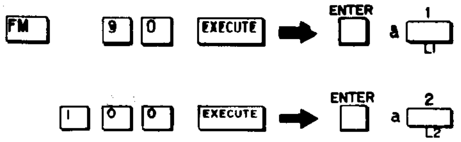

SHIFT
2
c
31m
WIDE
AM
9400.0 kHz
MW 9kHz
SCAN 2

DEFINE scan

—To scan between the desired frequencies, in a part of a broadcast band or beyond a broadcast band

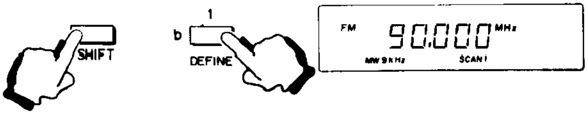
① Memorize the lower limit frequency and the upper limit frequency to the a-1 and a-2 keys as follows:
Tune in the frequency with direct tuning, and keeping the ENTER key pressed, press the a-1 or a-2 key.

Example: FM 90 MHz - 100 MHz


FM
9
0
EXECUTE
ENTER
1
a
L1
1
0
0
EXECUTE
ENTER
2
a
L2

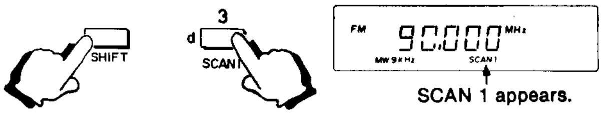
② Keeping the SHIFT key pressed, press the DEFINE key.

The memorized lower limit frequency appears.


SHIFT
1
b
DEFINE
FM
90.000 MHz
MW 9kHz
SCAN 1

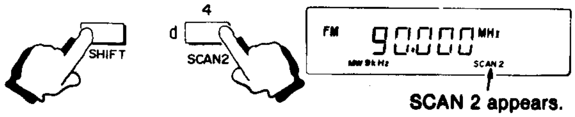
3 Select the scan mode. Keeping the SHIFT key pressed, press the SCAN 1 or SCAN 2 key.

SCAN 1 —To stop scanning at the first station located


SHIFT
3
d
SCAN1
FM
90.000 MHz
MW 9kHz
SCAN 1

SCAN 1 appears.

SCAN 2 —To stop scanning for 1.5 seconds at each station located

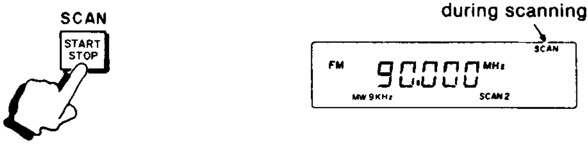

SHIFT
4
d
SCAN2
FM
90.000 MHz
MW 9kHz
SCAN 2

SCAN 2 appears.

* SCAN 2 mode is factory-preset.

4 Press the SCAN START/STOP key to start scanning.

SCAN is displayed during scanning.


SCAN
START
STOP
SCAN
FM
90.000 MHz
MW 9KHz
SCAN 2

- ●To resume scanning in SCAN 1 mode, press the SCAN START/STOP key again. Repeat this procedure until the desired station is located.
- ●In SCAN 2 mode, press the SCAN START/STOP key when the desired station is located. The station is tuned in continuously.
- ●When the upper limit frequency is reached, the receiver will scan back to the lower limit with a beep.

5 If necessary, tune in the station precisely with the MANUAL TUNING knob.
6 Adjust the antenna and the volume.

After listening, set the POWER switch to OFF.

BROADCAST BANDS

You can designate a broadcast band to be scanned from the following, by pressing the SHIFT key and the corresponding MEMORY PRESET key.

Broadcast band		Frequency range to be scanned	Scanning interval
LW		150 - 285 kHz	3 kHz
MW		531 - 1620 kHz (530 - 1620 kHz)	9 kHz (10 kHz)
SW	120 m	2250 - 2550 kHz	**5 kHz**
	90 m	3150 - 3450 kHz	
	75 m	3850 - 4050 kHz	
	60 m	4700 - 5110 kHz	
	49 m	5900 - 6250 kHz	
	41 m	7000 - 7400 kHz	
	31 m	9400 - 10000 kHz	
	25 m	11500 - 12150 kHz	
	21 m	13500 - 13900 kHz	
	19 m	15000 - 15700 kHz	
	16 m	17450 - 18000 kHz	
	13 m	21350 - 21950 kHz	
	11 m	25570 - 26100 kHz	
FM	**See page 1.**	76.0 - 108.0 MHz 87.5 - 108.0 MHz	0.05 MHz
AIR*		116 - 136 MHz	0.025 MHz

* Not provided with certain models.

- The frequency ranges of the SW meter bands to be scanned are somewhat wider than those indicated on the front panel of the receiver.
- The frequencies between two SW meter bands can be scanned with the DEFINE scan at a 5 kHz scanning interval.

To check the frequency range to be scanned

Keeping the SHIFT key pressed, press the L1 (a-1) key or the L2 (a-2) key. The lower limit frequency or the upper limit frequency appears on the frequency display.

- The selected scanning range is memorized even after the receiver is once turned off or the station beyond the range is tuned in.

Notes

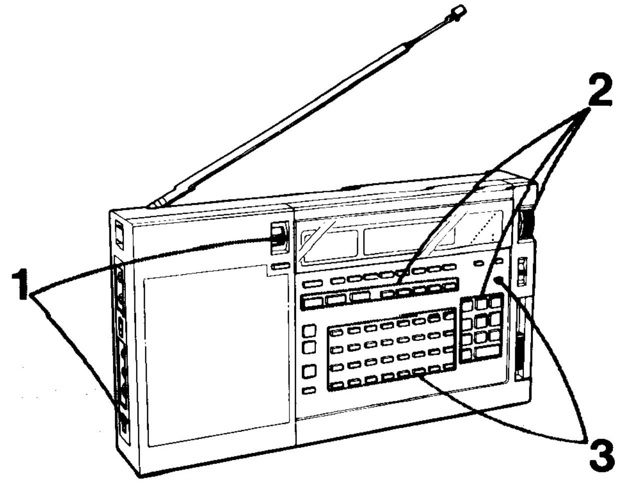
- Since scanning stops with a stronger signal than the preset level, it may stops a little before or after the exact frequency of a station. If this happens, **tune in the station precisely with the MANUAL** TUNING knob.
- When scanning does not stop at all during AM (LW, MW or SW) reception, make sure the AM RF GAIN control (right side) is set to MAX and the AM ATT selector (left side) is set to DX.
- When scanning stops at a noise or many unwanted stations during AM reception, slide the AM RF GAIN control slightly toward MIN. Then, set the AM ATT selector to LOCAL.
- AM mode, scanning range setting, scan mode and MW scanning interval cannot be changed during scanning.

MEMORY TUNING

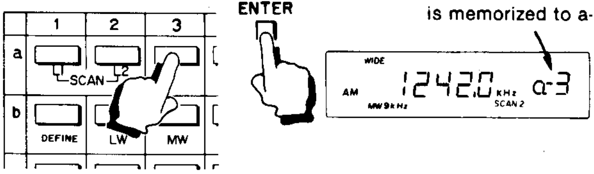
Once the frequencies of the stations are memorized, all you have to do is to push a key.
Up to 32 stations can be memorized **to the a-1 to d-8** MEMORY PRESET keys.

HOW TO MEMORIZE A STATION

The numbers in the illustration refer to the sequence of operations.



1 Set the MAIN POWER switch and the POWER switch to ON.
2 Tune in the desired station using any tuning method—direct tuning (page 9), manual tuning (page 10) or scan tuning (page 14), and set AM mode appropriately when receiving AM stations.
3 **Keeping the ENTER key pressed**, press one of the MEMORY PRESET keys.



Indicates the station is memorized to a-3 key.

Repeat steps 2 and 3 for each MEMORY PRESET key.

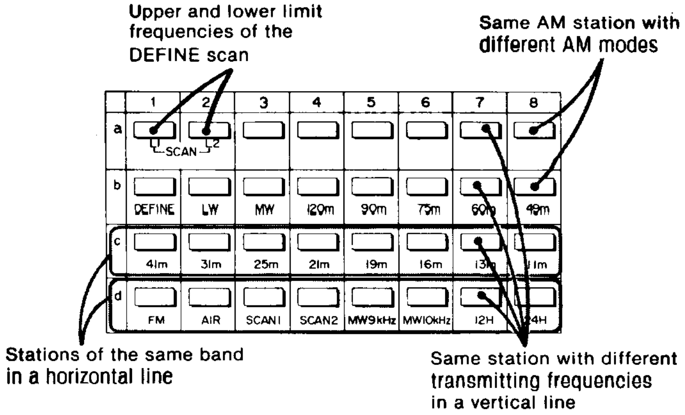
- If you memorize another station to a key to which you have already memorized a station, the previous station will be erased. You cannot erase a station without memorizing another station.
- AM 150 kHz are memorized to all the keys at the factory.

Note

After replacing the computer/clock batteries, be sure to memorize the stations again. The memory contents will be erased when the batteries are removed.

SCAN TUNING

Example of memorizing stations


Upper and lower limit frequencies of the DEFINE scan
Same AM station with different AM modes
1
2
3
4
5
6
7
8
a
b
c
d
SCAN
DEFINE
LW
MW
120m
90m
75m
60m
49m
41m
31m
25m
21m
19m
16m
13m
11m
FM
AIR
SCAN1
SCAN2
MW9kHz
MW10kHz
12H
24H
Stations of the same band in a horizontal line
Same station with different transmitting frequencies in a vertical line

To check the memory
After memorizing the stations, press each MEMORY PRESET key in turn to check the stations have been memorized correctly.

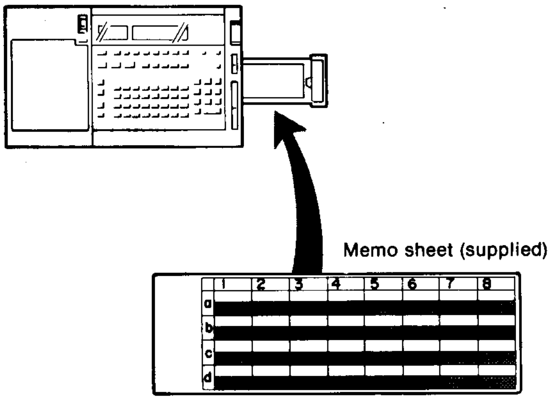
To check the memory while receiving a station
Keeping the SKIP key pressed, press the MEMORY PRESET keys in turn. The memorized frequencies appear on the display in turn, while the station remains received. By releasing the keys, the frequency being received will be displayed. This is convenient for deciding the MEMORY PRESET key to which the just received station is to be memorized.

HOW TO RECEIVE A MEMORIZED STATION

Turn on the receiver and press the MEMORY PRESET key.
The memorized frequency will be received.

HOW TO USE THE MEMO SHEET

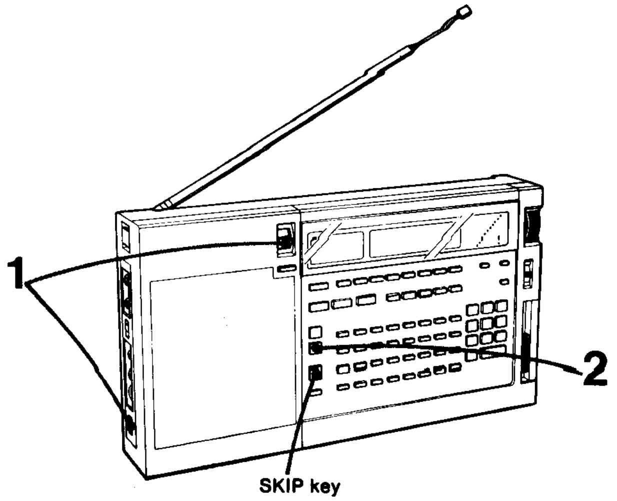
Note the memorized frequencies on the supplied memo sheet and stick it to the information plate. You can refer to it by sliding out the plate.


Memo sheet (supplied)
1
2
3
4
5
6
7
8
a
b
c
d

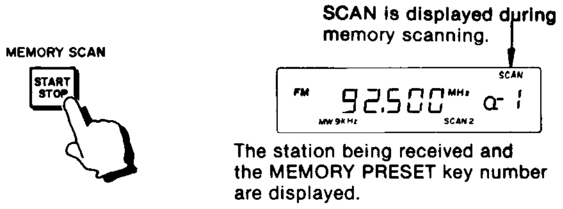
MEMORY SCAN TUNING

The stations memorized to the MEMORY PRESET keys are scanned from the a-1 key to d-8 key in sequence and scanning stops automatically for 5 seconds or so when a signal is received. Only the desired stations can be scanned by skipping the other memorized stations.

The numbers in the illustration refer to the sequence of operations.



1 Set the MAIN POWER switch and the POWER switch to ON.
2 Press the MEMORY SCAN START/STOP key.
The stations memorized to the a-1 key to the d-8 key will be scanned in sequence.

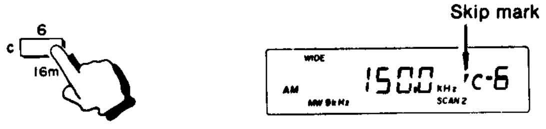

MEMORY SCAN
START STOP
SCAN is displayed during memory scanning.
SCAN
FM
92.500 MHz
a-1
MW 9kHz
SCAN 2
The station being received and the MEMORY PRESET key number are displayed.

When a signal is received, scanning will stop for 5 seconds and will then resume.

To stop scanning, press the MEMORY SCAN START/STOP key.

TO SCAN STATIONS OF SOME KEYS OR OF A CERTAIN BAND ONLY

Skip mark
When a MEMORY PRESET key is pressed initially, the ◤ (skip) mark is displayed with the number of the key. This mark means that the key is skipped during memory scanning.


Skip mark
6
c
16m
WIDE
AM
1500 kHz
c-6
MW 9kHz
SCAN 2

The skip mark initially appears with all the MEMORY PRESET keys. It will be erased automatically once a station is memorized to the key, so that the station can be located by memory scanning.

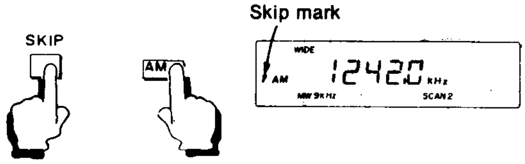
To scan stations of some keys only

1 Press the MEMORY PRESET key to which the station you want to skip is memorized.
2 **Keeping the SKIP key pressed**, press the same MEMORY PRESET key again so the ▼ mark appears.

To scan stations of a certain band (FM, AM or AIR*) only

Example: To scan FM stations only

Keeping the SKIP key pressed, press the AM band select key (and the AIR band select key for certain models) once or twice so that the ▼ mark appears on the upper left of the band indication.



* The AIR band is not provided with certain models.

To check the keys to be skipped while receiving a station

Keeping the SKIP pressed, press the MEMORY PRESET keys from the a-1 key to the d-8 key in turn and check the ▼ mark. By releasing the keys, the previous station is received.

To erase the ▼ mark

1 Press the MEMORY PRESET key for which you want to erase the ▼ mark.
2 **Keeping the SKIP key pressed**, press the same MEMORY PRESET key again. The ▼ mark will be erased.

Notes

- The ▼ mark with the band indication has priority over that of a MEMORY PRESET key. So, when the ▼ mark is set with the band indication, the key is skipped even if the ▼ mark of the key itself has been erased.
- The SHIFT key and SKIP key do not function during memory scanning.

Error indication

Error.4

When all the MEMORY PRESET keys are skipped during memory scanning, this indication will appear for approx. 5 seconds and will then disappear. ➡ Erase the ▼ mark of the required keys. See "To erase the ▼ mark".

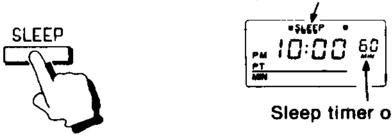
SLEEP TIMER OPERATION

—To turn off the receiver automatically

The receiver can be turned off automatically after 15, 30 or 60 minutes by the sleep timer.

1 Set the MAIN POWER switch to ON.
2 Set the POWER switch to OFF (or TIMER).
3 Select the sleep timer operation time by pressing the SLEEP key. With each push of the key, the digits of the operation time changes from 60 to 30 to 15 (minutes), then the receiver is turned off. With another push, 60 will appear again.

SLEEP is displayed during sleep timer operation.



Sleep timer operation time

4 Tune in the desired station.

The remaining operation time is displayed as the time elapses. The receiver will be turned off automatically after the preset time.

To turn off the receiver before the preset time

Press the SLEEP key repeatedly so that no digits of the operation time are displayed. Or, set the POWER switch ON, and then reset to OFF.

To cancel the sleep timer and continue listening

Set the POWER switch to ON.

Error indication

Error.3

If you press the SLEEP key when there is no radio power source, this indication will appear for approx. 5 seconds and will then disappear. ➡ Check the following.

- The MAIN POWER switch is set to OFF.
- The radio batteries are exhausted.
- The ac power adaptor or the car battery cord is connected to the DC IN 4.5 V jack when battery operation is attempted.
- The ac power adaptor or the car battery cord is not connected correctly to a wall outlet or a cigarette lighter socket of a car. When the power is supplied, the receiver is turned on and will be turned off automatically after the displayed time has elapsed.

PROGRAMMABLE TIMER OPERATION

—To turn on the receiver automatically

Any memovized station can be turned on automatically at the desired time and turned off after 60, 30 or 15 minutes by the programmable timer. Four timer programs can be set.

Before setting the timer

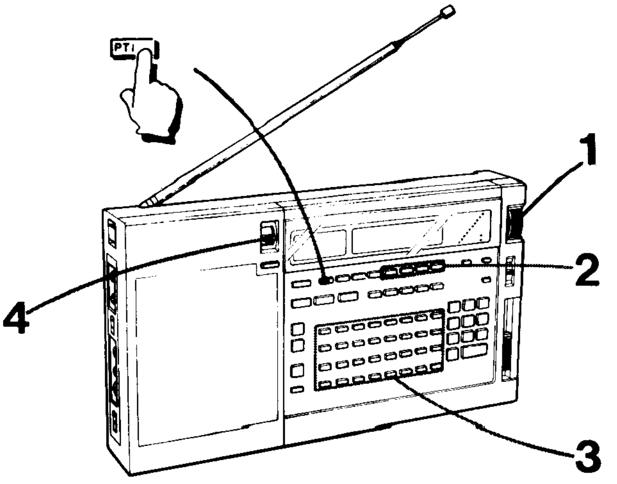
- Set the MAIN POWER switch and the POWER switch to ON.
- Memorize the stations to be turned on to the MEMORY PRESET keys.
- Adjust the VOLUME control to normal listening level.

HOW TO SET THE TIMER

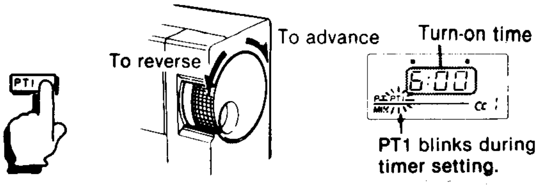
Set the following three items.

①Turn-on time
②Timer operation time (60, 30 or 15 minutes)
③Station to be turned on (number of the MEMORY PRESET key)

Example: To receive the station memorized to the a-3 key for 30 minutes from 6:00 a.m.

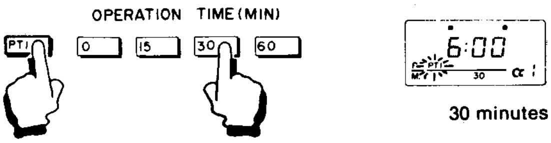


1 **Keeping the PT1 key pressed**, turn the TIME ADJ knob to set the turn-on time.



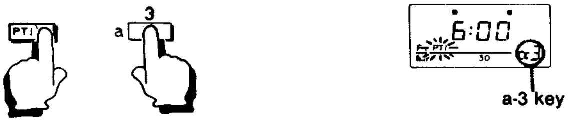
For 12 hour display, check the AM/PM indication.
AM 12:00 = midnight, PM 12:00 = noon

2 **Keeping the PT1 key pressed**, press one of the OPERATION TIME keys (60, 30 or 15 minutes) to select the timer operation time.



30 minutes

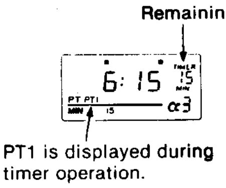
3 **Keeping the PT1 key pressed**, press the MEMORY PRESET key to which the station you want to receive is memorized.



Repeat the same procedure for setting other programs on PT2, PT3 and PT4 keys.

4 Set the POWER switch to TIMER.

The receiver will be turned on at the preset time.
The remaining operation time is displayed as the time elapses.
The receiver will be turned off automatically after the preset time.



To turn off the receiver before the preset time
Set the POWER switch to OFF. Reset it to TIMER to turn on the receiver at the next preset time.

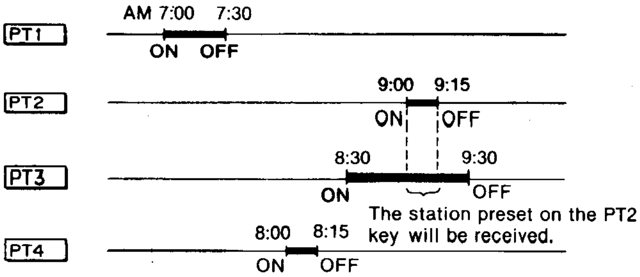
To check the timer programs
When the POWER switch is set to ON, press the PROGRAMMABLE TIMER key.
When the POWER switch is set to TIMER or OFF, press the SLEEP key, and then the PROGRAMMABLE TIMER key.
The preset timer program is displayed while the PROGRAMMABLE TIMER key is kept pressed.

Note
During timer operation, the other timer programs cannot be checked.

To cancel the timer program
Set a new program, and the previous program will be cancelled.

How to use the OPERATION TIME 0 key
When you do not want to turn on the receiver on a particular day only, set the operation time to 0 by pressing the PROGRAMMABLE TIMER key and the OPERATION TIME 0 key.
The receiver will not be turned on at the preset time.
Later, reset the operation time appropriately to turn on the next day.

Examples of four timer programs

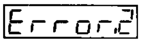


- The stations will be received in the order of the preset turn-on times. (PT1 ➡ PT4 ➡ PT3 ➡ PT2 in the above example.)
- When two programs overlap, priority is given in the order from PT1 key to PT4 key. In the above example, the station preset on the PT2 key will be received from 9:00 to 9:15 and the station preset on PT3 key will return from 9:15 to 9:30.

To use the sleep timer after setting the timer programs
Press the SLEEP key and tune in the desired station.
You can fall asleep listening to the radio and woken up by the other program.

- The programmable timer has priority over the sleep timer. So, if the turn-on time of the programmable timer comes during the sleep timer operation, the station preset on the PT key will be received.

Error indication



During programmable timer operation, none of the keys on the front panel except the LIGHT key and the BATTERY CHECK key nor the MANUAL TUNING/TIME ADJ knob function. When you touch a key or the knob, this indication will appear for approx. 5 seconds and will then disappear. ➡To operate the keys or the knob, set the POWER switch to ON.

EXTERNAL ANTENNA CONNECTION

(Only for models with the external antenna jacks provided)

FOR FM/AIR BAND RECEPTION

In a steel-frame building, a mountainous area, at a distance from the transmitter or in a location where ignition noise is severe, FM/AIR band reception may be unsatisfactory with the telescopic antenna. In this case, connect the optional Sony AN-3 VHF antenna or other appropriate external antenna.

Connection
See illustration H on page 5.

1. Connect the 50-75 ohm coaxial cable to the supplied antenna connector.
   - ① Fold the tabs on the antenna connector.
   - ② Prepare the end of the cable as illustrated.
   - ③ Fix the center conductor and shield braid as illustrated.
   - ④ Close the lid and tighten the screws.
2. Connect the antenna connector to the EXT ANT AIR/FM jack of the receiver.

Notes

- Locate an outdoor antenna as far away from the street as possible.
- For further details, refer to the antenna instruction manual.

FOR SW RECEPTION

Usually, the telescopic antenna is sufficient for SW reception. However, in a building or for more stable SW reception, the use of the supplied SW external antenna is recommended.

Connection
See illustration I on page 5.

1. Connect the ground wire (if necessary) and the spade lug of the SW external antenna to the terminals on the supplied antenna connector, close the lid and tighten the screws.
2. Connect the antenna connector to the EXT ANT AM jack of the receiver.

When reception is noisy, connect one end of a ground wire to the antenna connector as illustrated and the other end directly to a convenient earth ground.

Notes

- When an external antenna is connected to the EXT ANT AM jack, the built-in ferrite bar antenna does not function.
- Never connect a ground wire to a gas pipe. Doing so could cause a fire.
- When there is lightning and you are using an external antenna, immediately disconnect the ac power adaptor (if connected) from the wall outlet. Never touch the antenna wire during a lightning storm.

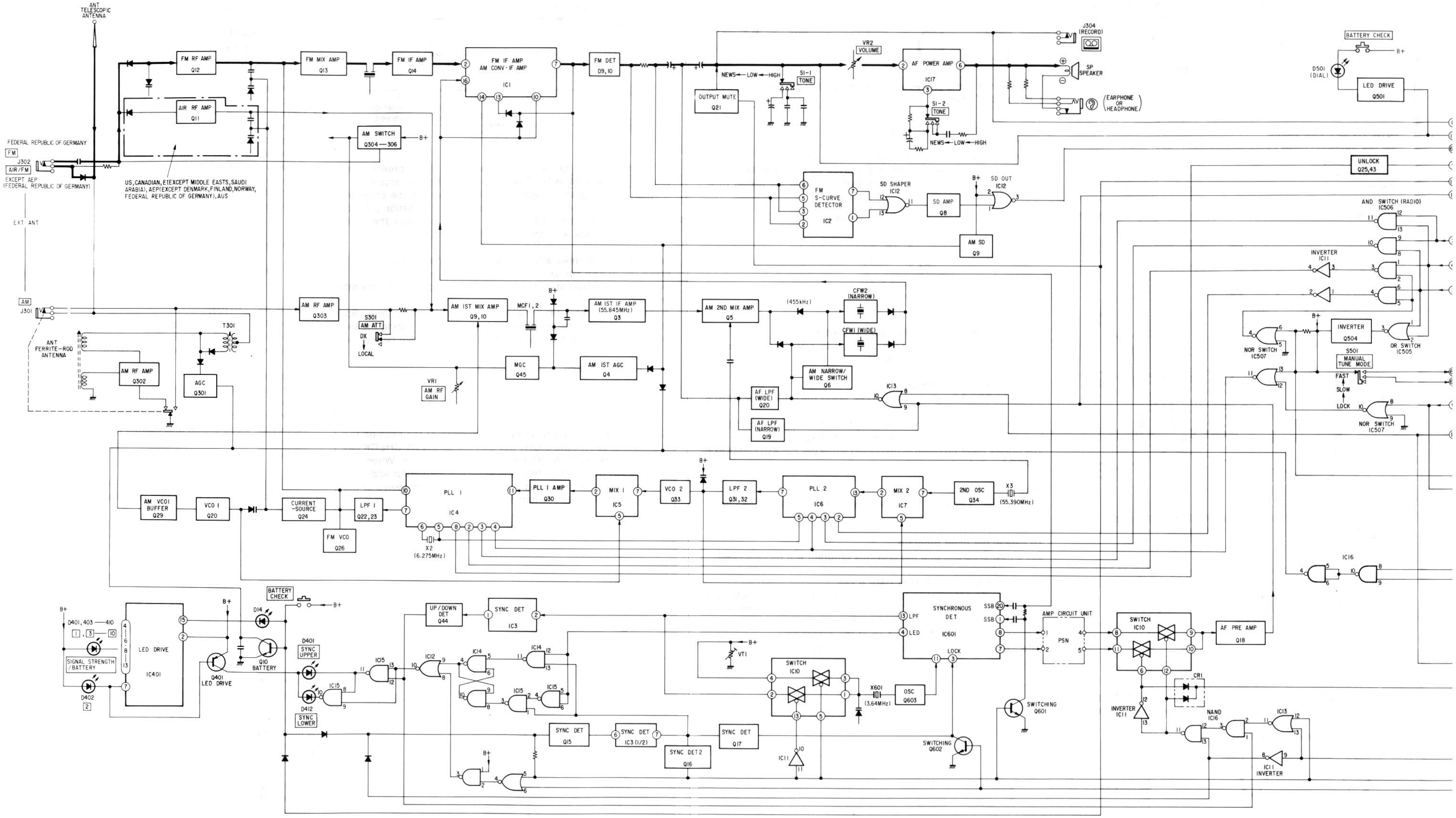
FOR MW/LW RECEPTION

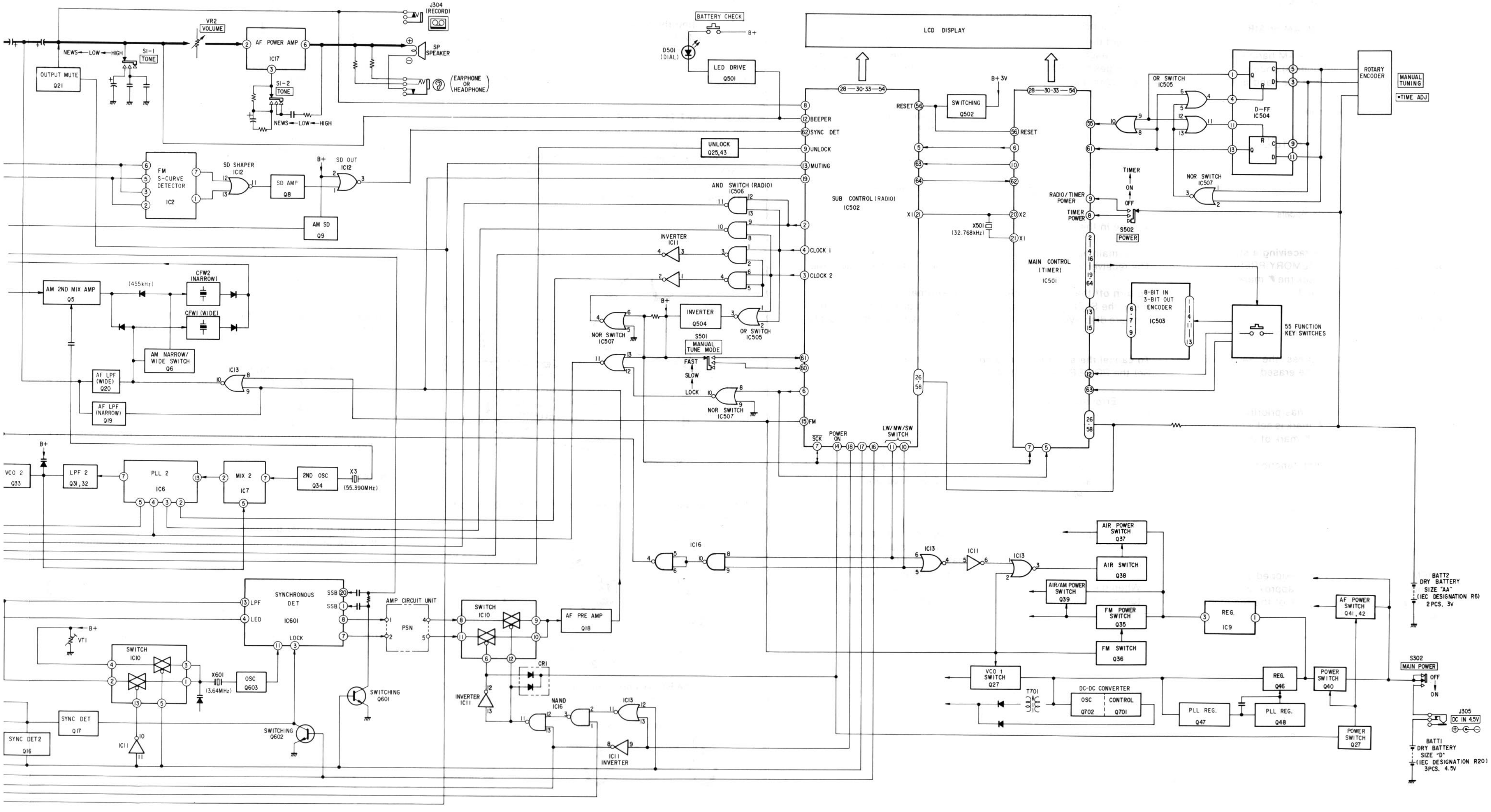
Use an optional AN-1 wide range antenna for better reception.

Connection
See illustration J on page 5.
Connect the OUTPUT of the antenna controller* and the INPUT of the antenna coupler* with the RK-69A connecting cord* or connect the OUTPUT of the antenna controller and the EXT ANT of the ICF-2001D/2010 with the connecting cord.

* supplied with the AN-1 wide range antenna.

1-2. BLOCK DIAGRAM


ANT TELESCOPIC ANTENNA
FM RF AMP Q12
AIR RF AMP Q11
FM MIX AMP Q13
FM IF AMP Q14
FM IF AMP AM CONV·IF AMP IC1
FM DET D9,10
AM SWITCH Q304—306
B+
FEDERAL REPUBLIC OF GERMANY
FM
J302
AIR/FM
EXCEPT AEP (FEDERAL REPUBLIC OF GERMANY)
US,CANADIAN,E(EXCEPT MIDDLE EASTS,SAUDI ARABIA),AEP(EXCEPT DENMARK,FINLAND,NORWAY, FEDERAL REPUBLIC OF GERMANY),AUS
EXT ANT
NEWS—LOW—HIGH
S1-1 TONE
OUTPUT MUTE Q21
VR2 VOLUME
AF POWER AMP IC7
S1-2 TONE
NEWS—LOW—HIGH
J304 (RECORD)
SP SPEAKER
(EARPHONE OR HEADPHONE)
FM S-CURVE DETECTOR IC2
SD SHAPER IC12
SD AMP Q8
SD OUT IC12
AM SD Q9
BATTERY CHECK
D501 (DIAL)
LED DRIVE Q501
UNLOCK Q25,43
AND SWITCH (RADIO) IC506
INVERTER IC11
INVERTER Q504
OR SWITCH IC505
NOR SWITCH IC507
S501 MANUAL TUNE MODE
FAST
SLOW
LOCK
NOR SWITCH IC507
AM
J301
ANT FERRITE-ROD ANTENNA
T301
AM RF AMP Q302
AGC Q301
AM RF AMP Q303
S301 AM ATT
DX
LOCAL
AM 1ST MIX AMP Q9,10
MCF1,2
AM 1ST IF AMP (55.845MHz) Q3
AM 2ND MIX AMP Q5
(455kHz)
CFW2 (NARROW)
CFW1 (WIDE)
AM NARROW/WIDE SWITCH Q6
MGC Q45
AM 1ST AGC Q4
VR1 AM RF GAIN
AF LPF (WIDE) Q20
AF LPF (NARROW) Q19
IC13
AM VCO1 BUFFER Q29
VCO 1 Q20
CURRENT-SOURCE Q24
LPF 1 Q22,23
FM VCO Q26
PLL 1 IC4
X2 (6.275MHz)
PLL 1 AMP Q30
MIX 1 IC5
VCO 2 Q33
LPF 2 Q31,32
PLL 2 IC6
MIX 2 IC7
2ND OSC Q34
X3 (55.390MHz)
IC16
D401,403—410
SIGNAL STRENGTH /BATTERY
D402
LED DRIVE IC401
Q401 LED DRIVE
Q10 BATTERY
D14
BATTERY CHECK
D401 SYNC UPPER
D412 SYNC LOWER
IC15
IC12
IC14
UP/DOWN DET Q44
SYNC DET IC3
SYNC DET Q15
SYNC DET IC3 (1/2)
SYNC DET2 Q16
SYNC DET Q17
VT1
SWITCH IC10
IC11
X601 (3.64MHz)
OSC Q603
SYNCHRONOUS DET IC601
LPF
LED
LOCK
SSB
SWITCHING Q601
SWITCHING Q602
AMP CIRCUIT UNIT
PSN
SWITCH IC10
AF PRE AMP Q18
CR1
INVERTER IC11
NAND IC16
IC13
IC11 INVERTER


J304 (RECORD)
VR2 VOLUME
AF POWER AMP IC17
SP SPEAKER
(EARPHONE OR HEADPHONE)
NEWS←LOW→HIGH
S1-1 TONE
S1-2 TONE
OUTPUT MUTE Q21
FM S-CURVE DETECTOR IC2
SD SHAPER IC12
SD AMP Q8
SD OUT IC12
AM SD Q9
B+
AM 2ND MIX AMP Q5
(455kHz)
CFW2 (NARROW)
CFW1 (WIDE)
AM NARROW/WIDE SWITCH Q6
AF LPF (WIDE) Q20
AF LPF (NARROW) Q19
IC13
VCO 2 Q33
LPF 2 Q31,32
PLL 2 IC6
MIX 2 IC7
2ND OSC Q34
X3 (55.390MHz)
SYNCHRONOUS DET IC601
SSB
LPF
LED
LOCK
AMP CIRCUIT UNIT
PSN
SWITCH IC10
AF PRE AMP Q18
VT1
X601 (3.64MHz)
OSC Q603
SYNC DET Q17
SYNC DET2 Q16
IC11
SWITCHING Q601
SWITCHING Q602
CR1
INVERTER IC11
NAND IC16
IC13
IC11 INVERTER
BATTERY CHECK
D501 (DIAL)
LED DRIVE Q501
UNLOCK Q25,43
AND SWITCH (RADIO) IC506
INVERTER IC11
INVERTER Q504
OR SWITCH IC505
NOR SWITCH IC507
S501 MANUAL TUNE MODE
FAST
SLOW
LOCK
NOR SWITCH IC507
LCD DISPLAY
28—30·33—54
BEEPER
SYNC DET
UNLOCK
MUTING
CLOCK 1
CLOCK 2
FM
SCK
POWER ON
LW/MW/SW SWITCH
SUB CONTROL (RADIO) IC502
RESET
SWITCHING Q502
B+3V
X1
X2
X501 (32.768kHz)
MAIN CONTROL (TIMER) IC501
RADIO/TIMER POWER
TIMER POWER
TIMER ON OFF
S502 POWER
8-BIT IN 3-BIT OUT ENCODER IC503
55 FUNCTION KEY SWITCHES
OR SWITCH IC505
D-FF IC504
NOR SWITCH IC507
ROTARY ENCODER
MANUAL TUNING
•TIME ADJ
IC16
IC13
IC11
AIR POWER SWITCH Q37
AIR SWITCH Q38
AIR/AM POWER SWITCH Q39
FM POWER SWITCH Q35
FM SWITCH Q36
REG. IC9
VCO 1 SWITCH Q27
T701
DC-DC CONVERTER
OSC Q702
CONTROL Q701
PLL REG. Q47
PLL REG. Q48
REG. Q46
POWER SWITCH Q40
AF POWER SWITCH Q41,42
POWER SWITCH Q27
BATT2 DRY BATTERY SIZE "AA" (IEC DESIGNATION R6) 2PCS. 3V
S302 MAIN POWER
OFF
ON
J305 DC IN 4.5V
BATT1 DRY BATTERY SIZE "D" (IEC DESIGNATION R20) 3PCS. 4.5V

TROUBLESHOOTING GUIDE

Should any problem occur with the set, make the following simple tests to determine whether or not servicing is required.
If the problem persists after you have made these tests, consult the nearest Sony dealer for further information.

GENERAL

No clock/timer display
- Incorrect polarity of computer/clock batteries. See page 8.
- Weak computer/clock batteries.

Display is dim.
- Weak computer/clock batteries.
- The set is being used in extremely high temperatures or in a place with excessive moisture.

Sound is not heard at all.
- Weak radio batteries.
- Incorrect polarity of radio batteries. See page 8.
- The VOLUME control is slid down completely.
- The earphone is plugged in.

Very weak or interrupted sound, or unsatisfactory reception.
- Weak radio batteries.
- Tuning or antenna adjustment is not correct.

➡ Tune in precisely with the MANUAL TUNING knob. For antenna adjustment, see page 11.
- Weak signal.

➡ In a vehicle or in a building, listen near a window.
➡ For AM reception, set the AM RF GAIN control to MAX and the AM ATT selector to DX.

TUNING

A frequency cannot be input in direct tuning.
- The next key was not pressed within 5 seconds after a key has been pressed.

Scanning does not stop.
- In SCAN 2 mode, scanning resumes after a station is received for 1.5 seconds. ➡ Set to SCAN 1 mode. See page 12.
- Weak signal.

➡ Adjust the antenna.
➡ For AM reception, set the AM RF GAIN control to MAX and the AM ATT selector to DX.

Scanning does not begin.
- A strong station is being received. ➡ Press the SCAN START/STOP key repeatedly until scanning begins.
- There are many strong stations.

➡ For AM reception, gradually slide the AM RF GAIN control toward MIN. If it is set to MAX, set the AM ATT selector to LOCAL.

A frequency cannot be memorized.
- Incorrect memorizing procedure. ➡ Keeping the ENTER key pressed, press one of the MEMORY PRESET keys.

The memorized frequency cannot be tuned in even if the MEMORY PRESET key is pressed.
- The memory has been erased. ➡ After replacing the computer/clock batteries, be sure to memorize the stations again.

A required station cannot be received during memory scanning.
- The station is skipped as the ▼ mark is displayed with the MEMORY PRESET key indication or the band indication.

➡ Erase the ▼ mark. See page 15.
- The station is weak.

➡ Adjust the antenna.
➡ For an AM station, set the AM RF GAIN control to MAX and the AM ATT selector to DX.

PROGRAMMABLE TIMER

The receiver does not turn on at the preset time.
- The POWER switch is not set to TIMER.
- The memory of the timer setting has been erased. ➡ After replacing the computer/clock batteries, be sure to reset it.
- The MAIN POWER switch is set to OFF.
- The timer operation time is set to 0.

ERROR INDICATIONS

Error.1 (Appears during direct tuning.)

- A frequency beyond the receivable range has been input.
- The band of the input frequency (AIR, FM or AM) is selected incorrectly.

Error.2 (Appears during programmable timer operation.)

- The programmable timer is operating and the key or the control you have touched cannot be activated.

Error.3 (Appears when the POWER switch is set to ON or when the SLEEP key is pressed.)

- The MAIN POWER switch is set to OFF.
- Weak radio batteries.
- Incorrect polarity of radio batteries.
- The ac power adaptor or the car battery cord is not connected securely.
- Battery operation is attempted while an ac power adaptor or a car battery cord is connected to the DC IN 4.5 V jack, but not to a wall outlet or a cigarette lighter socket.

Error.4 (Appears during memory scanning.)

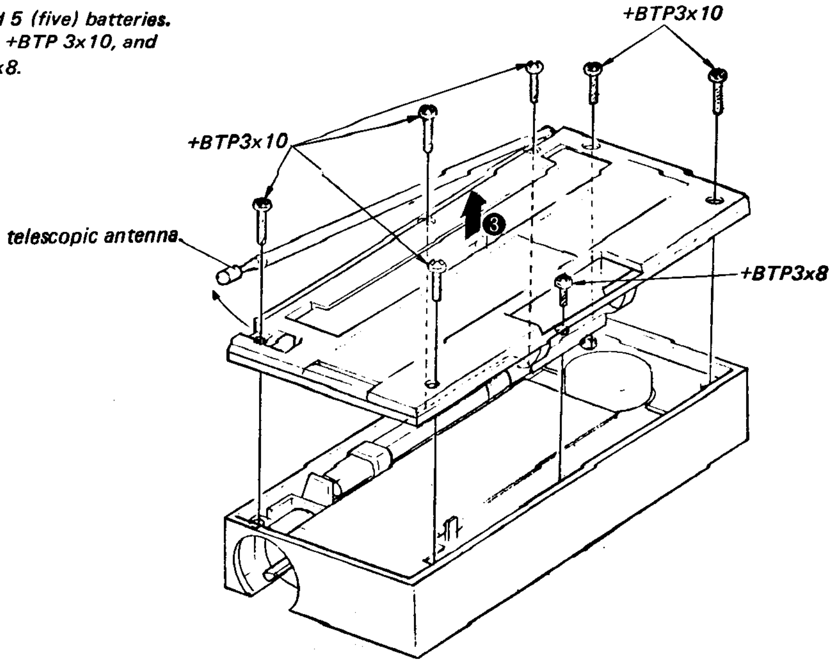
All the memorized stations are skipped. ➡ Erase the ▼ mark. See page 15.

SECTION 2
DISASSEMBLY

Note: Follow the disassembly procedure in the numerical order given.

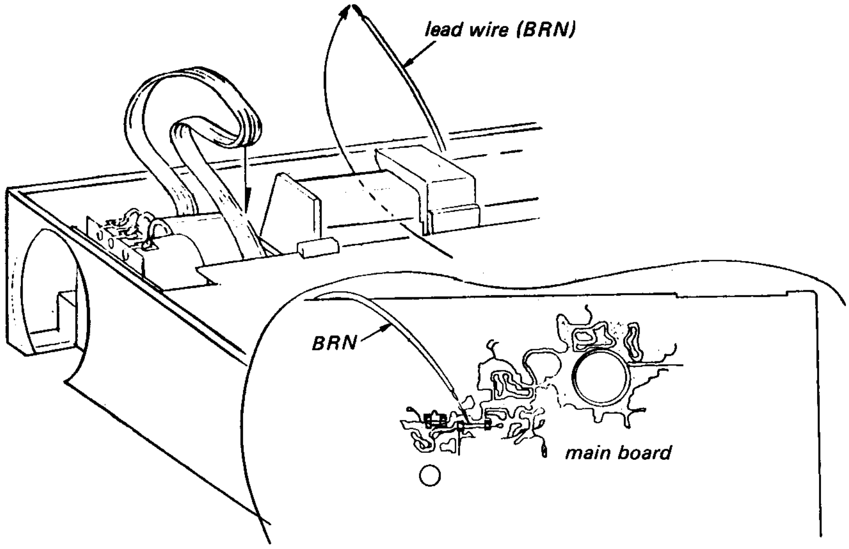
REAR CABINET

❶ *Remove battery lid and 5 (five) batteries.*
❷ *Remove six (6) screws, +BTP 3x10, and one (1) screw, +BTP 3x8.*


+BTP3x10
+BTP3x10
telescopic antenna
❸
+BTP3x8

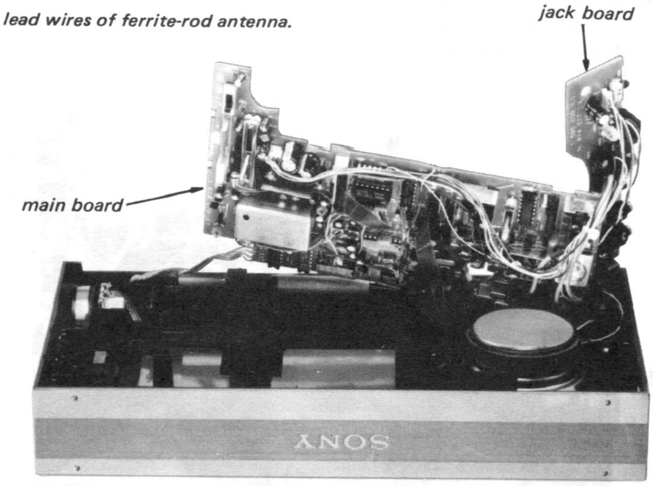
MAIN BOARD (1)

❶ *Unsolder lead wire (BRN).*


lead wire (BRN)
BRN
main board

MAIN BOARD (3)

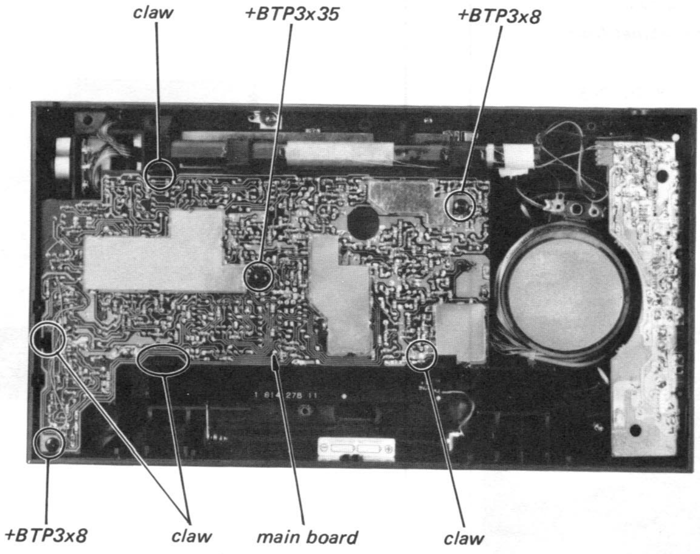
❹ *Lift up the jack board by releasing jack rings from case holes and by releasing slide switch knob from control knob grooves.*
Do not break 4 (four) lead wires of ferrite-rod antenna.


jack board
main board
SONY

❺ *Lift up main board by releasing switch and control slides from switch and control knobs.*
Do not break 4 (four) lead wires of ferrite-rod antenna.

MAIN BOARD (2)

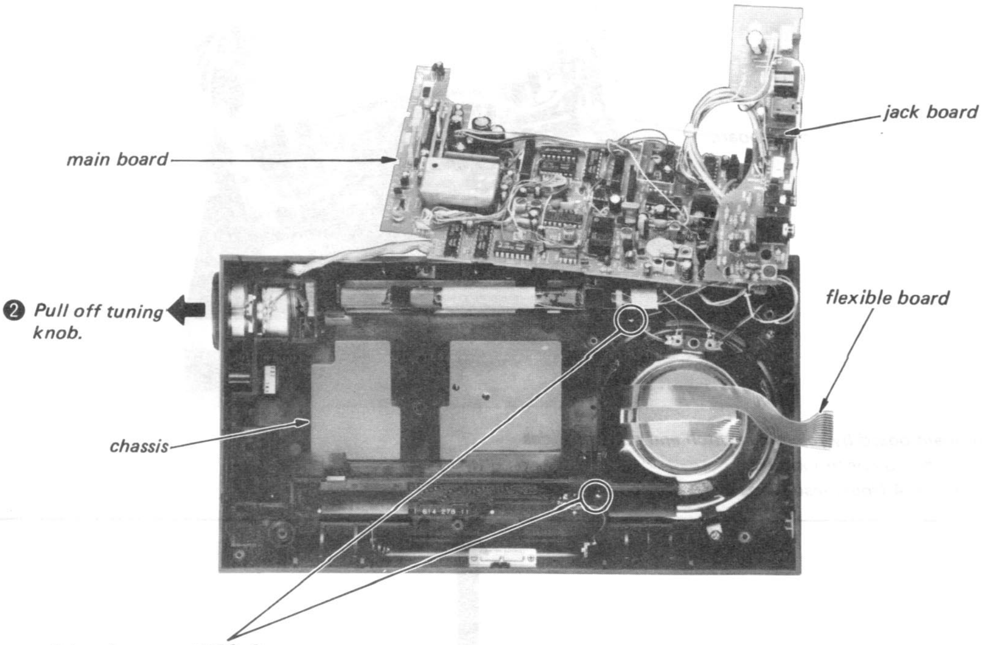
❷ *Remove three screws.*


claw
+BTP3x35
+BTP3x8
+BTP3x8
claw
main board
claw

❸ *Unlock chassis claws from main board.*

CHASSIS

❶ *Disconnect flexible board from main board by unlocking flexible board connectors CN1 and CN2. To unlock flexible board connectors, pull up their movable locking sections. To lock flexible board connectors, push on movable locking sections.*


main board
jack board
flexible board
chassis

❷ *Pull off tuning knob.*

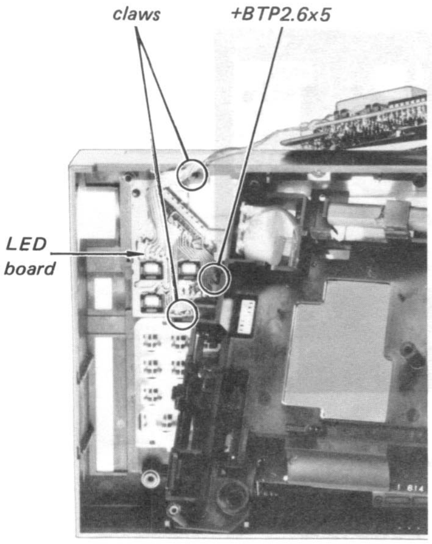
❸ *Remove 2 (two) screws, +BP3x8.*

❹ *Lift the chassis up. Key board comes with chassis.*

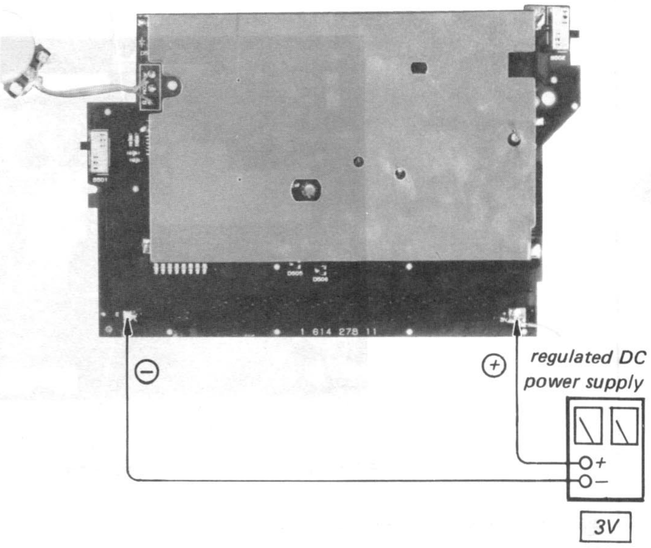
LCD INDICATION PLATE

❶ *Remove 1 (one) screw, +BTP2.6x5.*

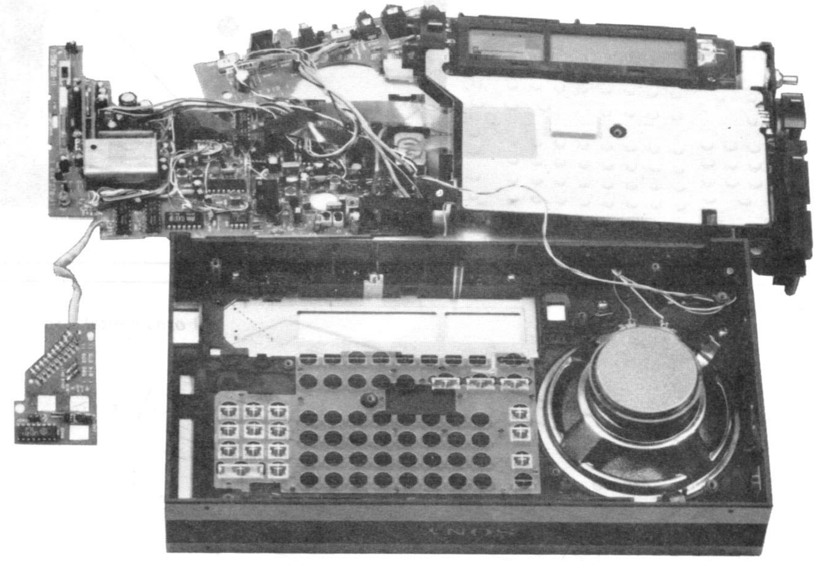
❷ *Unlock 2 (two) claws of cabinet from LED board.*


claws
+BTP2.6x5
LED board

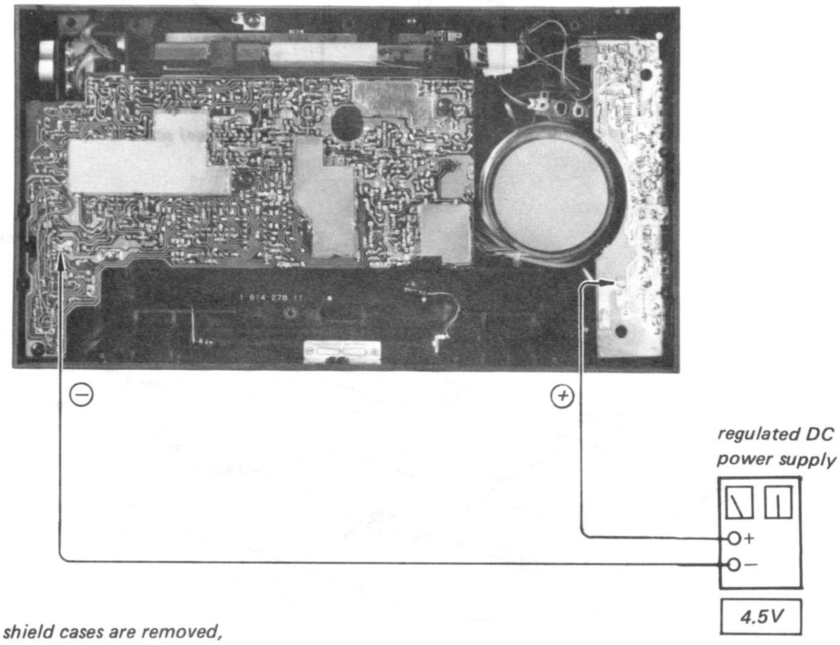
External 3V power-supply connection.


⊖
⊕
regulated DC power supply
+
−
3V

1. *Reconnect flexible board to main board.*
2. *Connect 2 (two) external power supplies, 4.5V DC and 3V DC to appropriate points, and some checking and adjustments can be made to main, jack and LED boards.*
   Additional extension speaker lead wires can help make checkings easier for viewing front-panel controls.



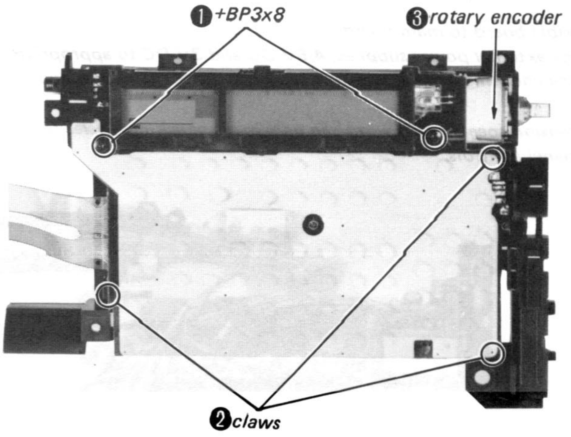
External 4.5V power-supply connection.



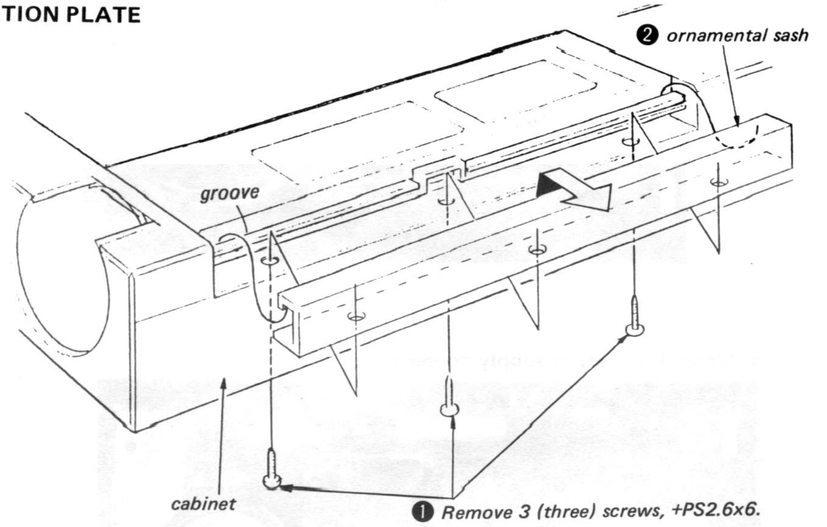
Note: When shield plates and shield cases are removed, make sure to install jumper-wire connections between lands to which they are installed, because shield plates and cases are providing function as jumper wires between lands.

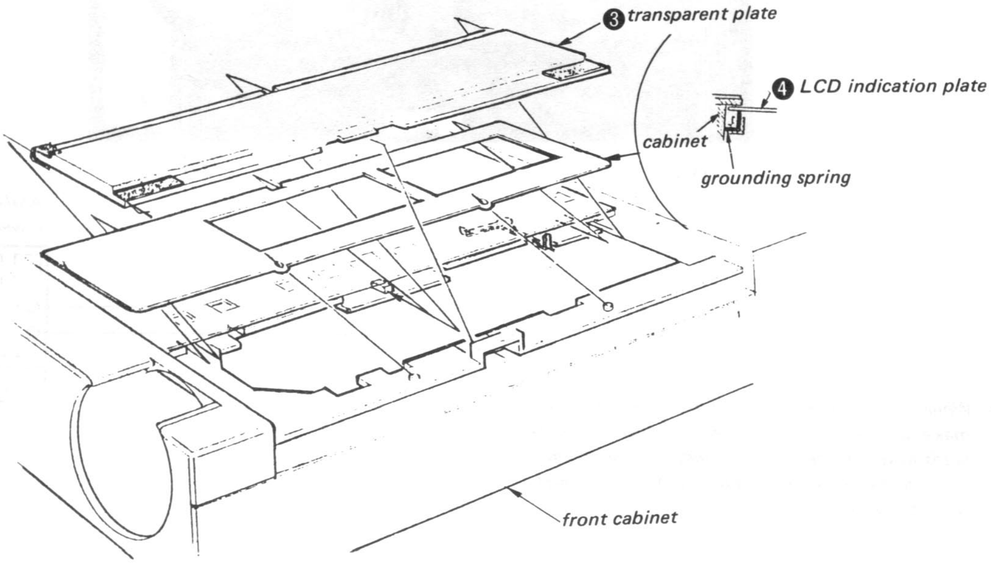
KEY BOARD

❶ *Remove 2 (two) screws, +BP3x8.*
❷ *Unlock 3 (three) claws of chassis from keyboard.*
❸ *Unscrew rotary encoder.*


❶+BP3x8
❸rotary encoder
❷claws

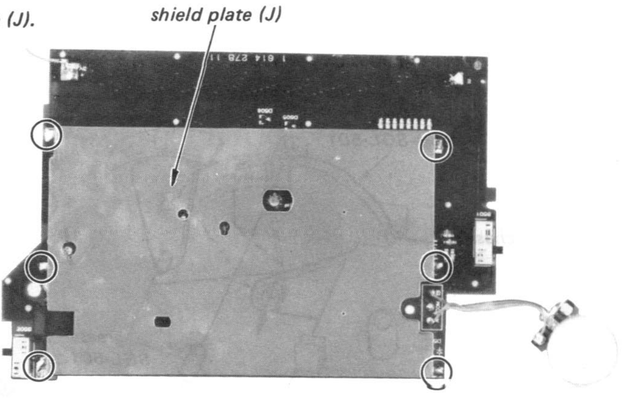
LCD INDICATION PLATE


❷ ornamental sash
groove
cabinet
❶ Remove 3 (three) screws, +PS2.6x6.

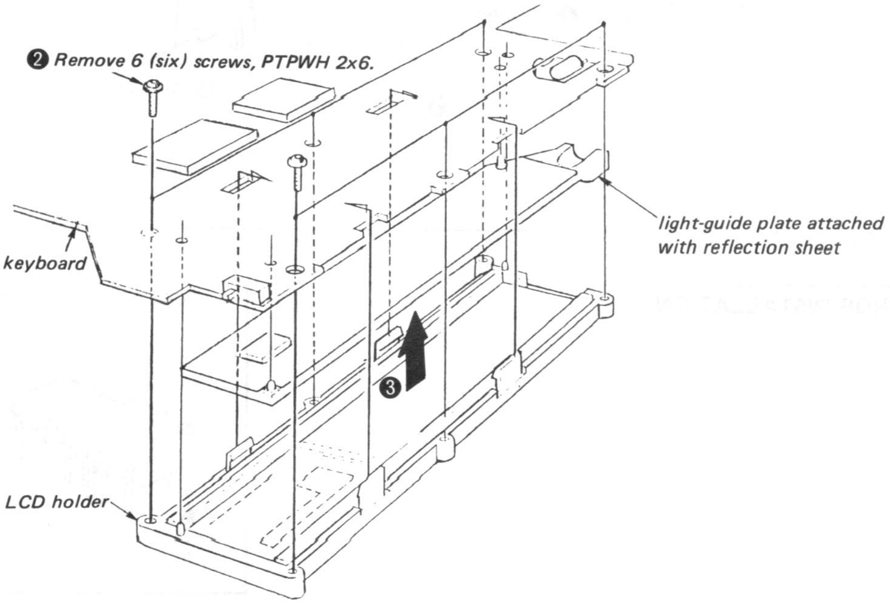

❸transparent plate
❹ LCD indication plate
cabinet
grounding spring
front cabinet

LCD PANEL

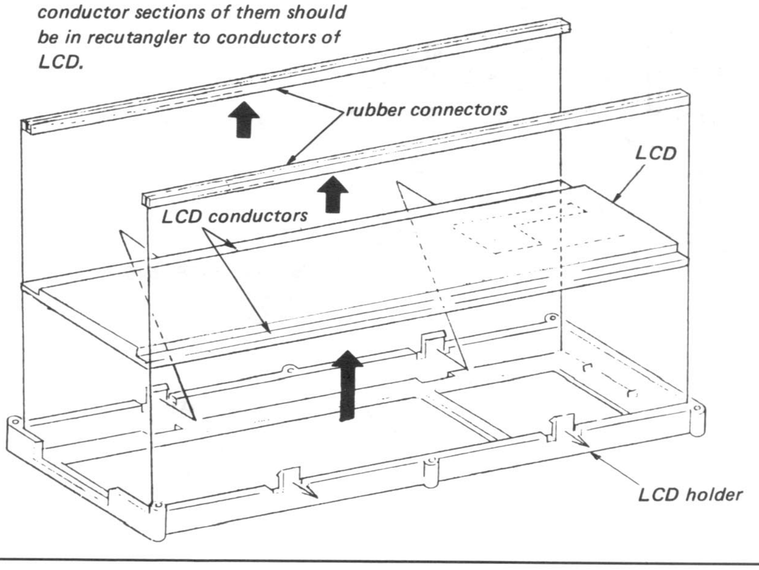
❶ *Unsolder shield plate (J).*


shield plate (J)

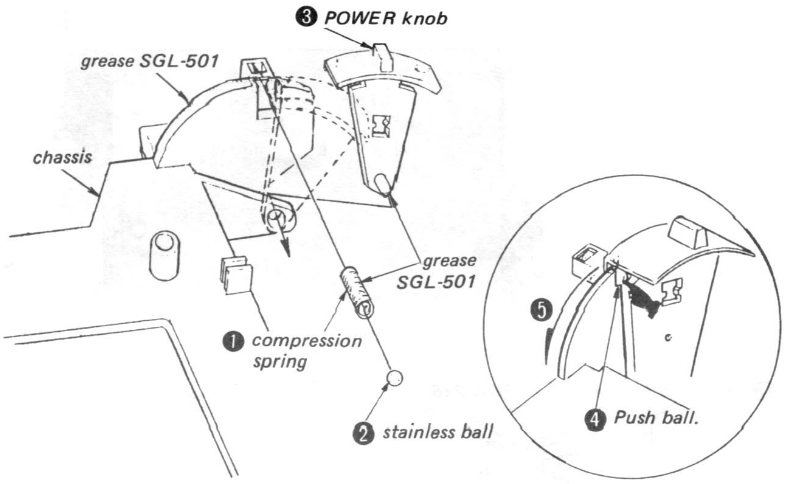
❷ *Remove 6 (six) screws, PTPWH 2x6.*


keyboard
light-guide plate attached with reflection sheet
❸
LCD holder

❹ *Remove 2 (two) rubber connectors. Note orientation of them. Inside conductor sections of them should be in recutangler to conductors of LCD.*

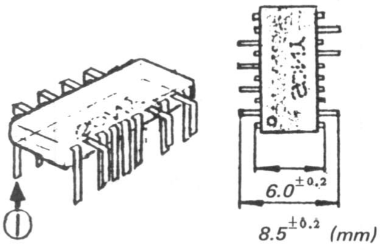

rubber connectors
LCD
LCD conductors
LCD holder

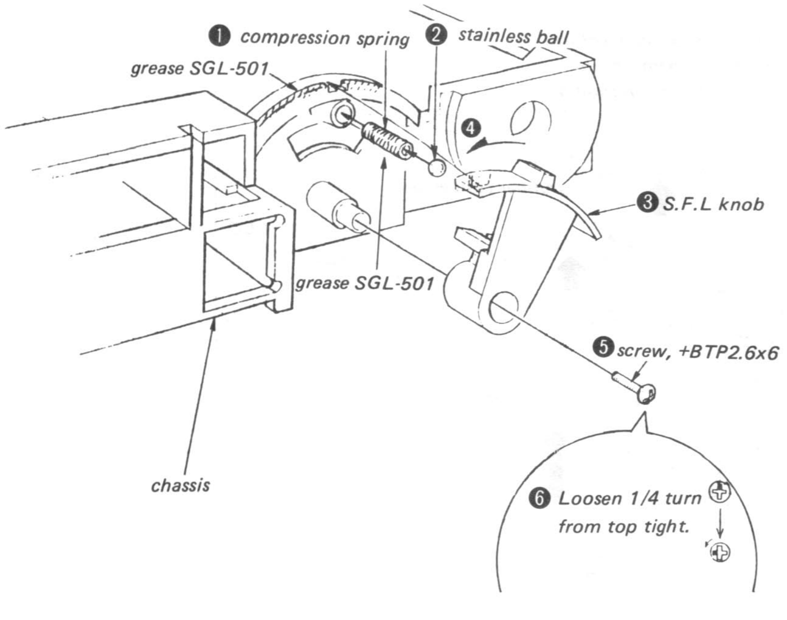
POWER KNOB INSTALLATION


❸ POWER knob
grease SGL-501
chassis
grease SGL-501
❶ compression spring
❷ stainless ball
❺
❹ Push ball.

S.F.L KNOB INSTALLATION

INSTALLATION OF IC601


①
6.0±0.2
8.5±0.2 (mm)


❶ compression spring
❷ stainless ball
grease SGL-501
❹
❸ S.F.L knob
grease SGL-501
❺ screw, +BTP2.6x6
chassis
❻ Loosen 1/4 turn from top tight.

SECTION 3
ADJUSTMENTS

3-1. ADJUSTMENTS

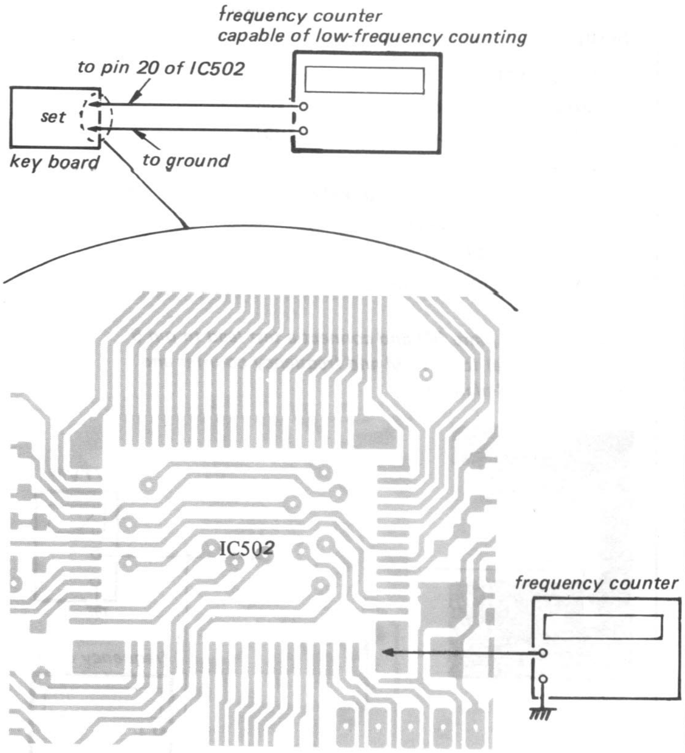
Note:

1. Disassembly is required to perform electrical adjustments. Refer to SECTION 2 "DISASSEMBLY". Two regulated DC power supplies are needed for a complete operation of the set. The set does not work good only with a 4.5V DC supply. Be sure to connect two power supplies to the proper points shown.
2. Positions of controls and switches are as follows unless otherwise specified.
   MAIN POWER switch: ON
   POWER switch: ON
   AM ATT switch: DX
   MANUAL TUNE MODE: as required
   TONE control: HIGH
   VOLUME control: as required
   All key switches: as required
3. When shield plates/cases are removed, be sure to connect jumper wires across appropriate soldering lands to recover electrical connections without shield plates/cases.
4. Checkings to the key-input operation of the key board can be made independently by grounding pin 9 (UNLOCK) of IC502, i.e., by macking a locked condition.

TIMER-CLOCK FREQUENCY ADJUSTMENT

Note: Remove shield plate (J) on the Key Board referring to the DISASSEMBLY section. Make jumper-wire connections, or re-install shield plate (J) after connecting frequency counter.

Setup:

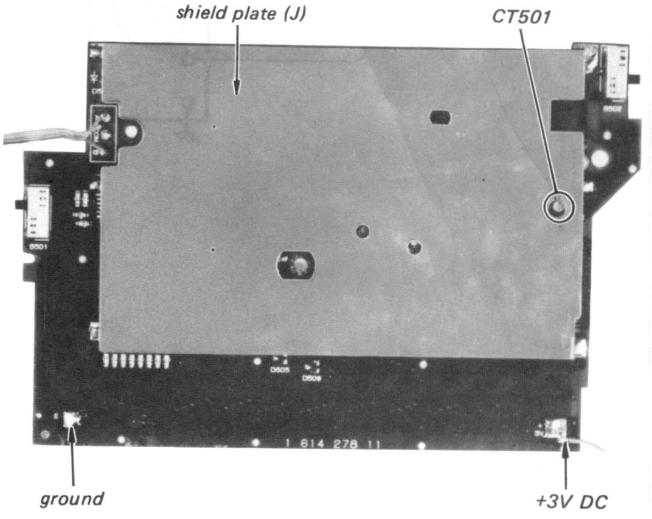

frequency counter
capable of low-frequency counting
to pin 20 of IC502
set
key board
to ground
IC502
frequency counter

Procedure:

Adjust CT501 for a 32.7680 kHz counting.

Adjustment Location:

– key board –

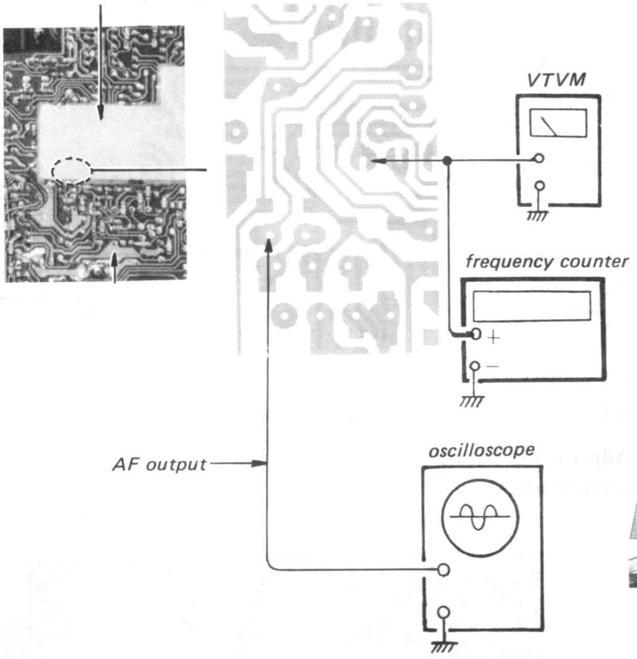

shield plate (J)
CT501
ground
+3V DC

SYNC ADJUSTMENT

Note: Frequency setting may alter when adjusted with shield plate (K) removed from sync board.
USB and LSB/CW modes are not provided for sets to the Middle Easts and Saudi Arabia.

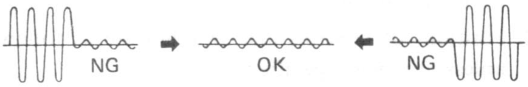
Setup:

Band: AM
Mode: as directed
AM RF GAIN control: as adequate
Frequency: as directed
(11,800.0 kHz when AM RF SSG is used)
MANUAL TUNE MODE: SLOW
SYNC switch: as directed

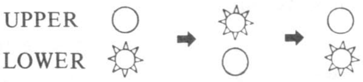

Remove shield plate (K) and connect a test lead to pin 6 (varicap voltage) for VTVM and frequency counter and re-install shield plate (K)

Procedure:

1. Correctly and just tune in the set to a known, stable and strong AM station in NARROW and SYNC OFF modes.
2. Set mode to USB.
3. Adjust VT1 for a 1.5V DC VTVM reading.
4. Adjust CT601 for a zero-beat note and waveform.



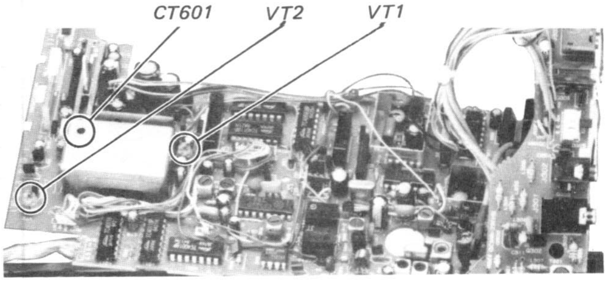
5. Turn SYNC switch on and, adjust VT2 and set it to the point at which SYNC LOWER indicator just turns off to SYNC UPPER indication.
Slowly turn VT2 back to the point at which SYNC UPPER indicator just turns off to SYNC LOWER indication, and leave VT2 as is.



6. Turn MANUAL TUNING knob to obtain a frequency indication just 100 Hz above the carrier of the station being received. (only "one' advancement in the first digit). Now, the SYNC UPPER indicator should lit.
7. Frequency counter should read 3.640 MHz ±100 Hz.

Adjustment Location:

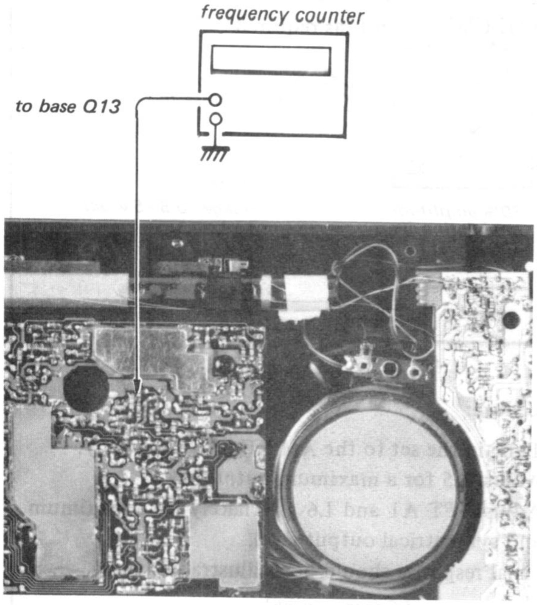
– main board –



PLL1 FREQUENCY ADJUSTMENT

Setup:

Band: FM
Frequency: 89.300 MHz

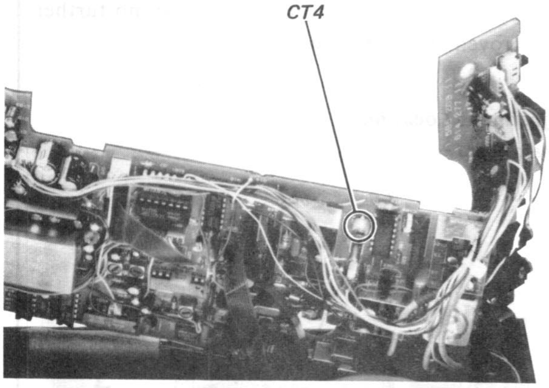

frequency counter
to base Q13

Procedure:

Adjust CT4 for a 100.000000 MHz or 100 MHz ± 30 Hz reading.

Adjustment Location

– main board –

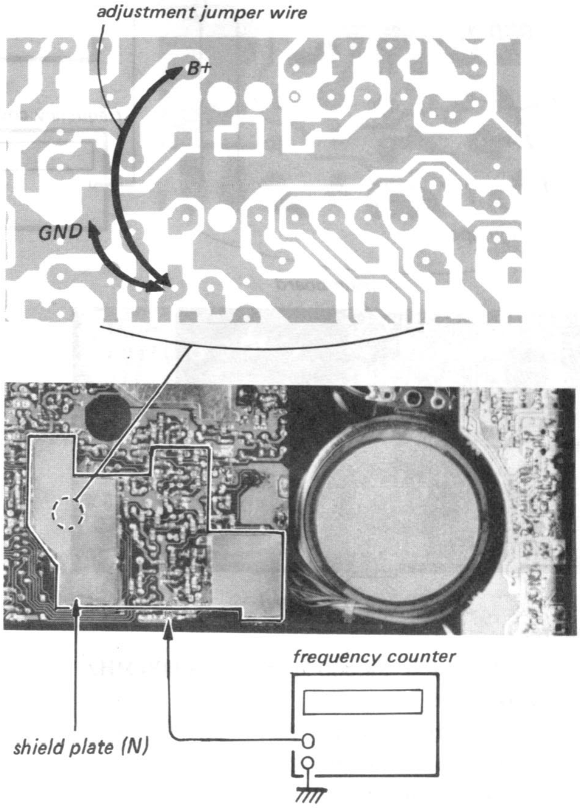


VCO2 FREERUN FREQUENCY ADJUSTMENT

Setup:

Band: AM

Remove shield plate (N) and install adjustment jumper wire between 3V B+ and the gate of Q31, and then re-install shield plate (N).

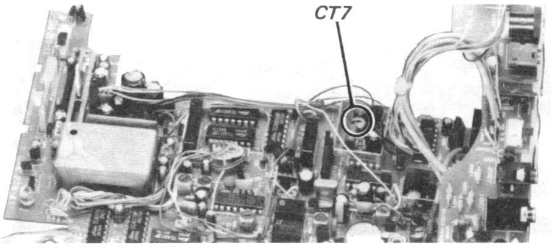

adjustment jumper wire
B+
GND
frequency counter
shield plate (N)

Procedure:

1. Adjust CT7 for a 54.000 MHz or 54.0 MHz ± 300 kHz reading.
2. Unsolder adjustment jumper wire at B+ land side. Connect this end to ground land. Counter reading should now be less than 46.2 MHz.
3. After the adjustment, remove the adjustment jumper wire and properly re-install shield plate (N).

Adjustment Location:

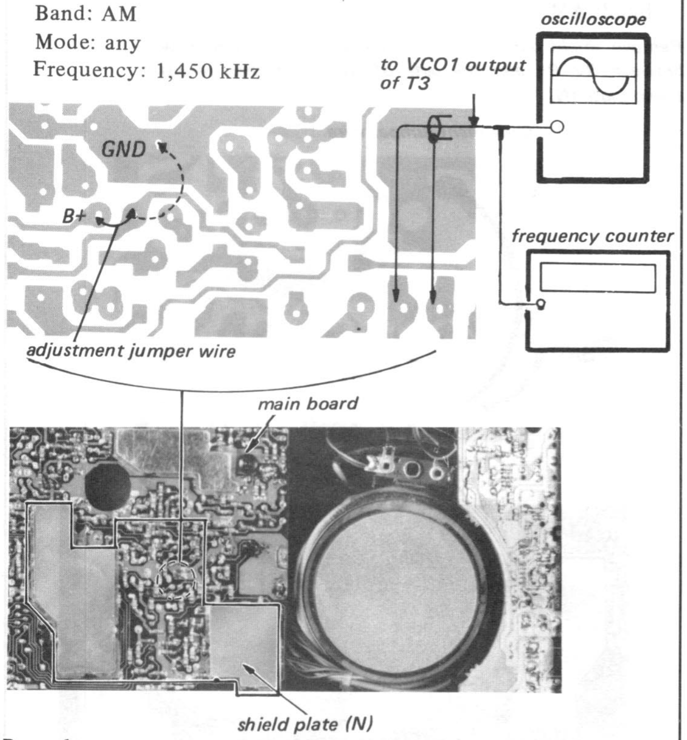
– main board –



VCO1 FREQUENCY AND TRACKING ADJUSTMENTS

Setup:

Band: AM
Mode: any
Frequency: 1,450 kHz

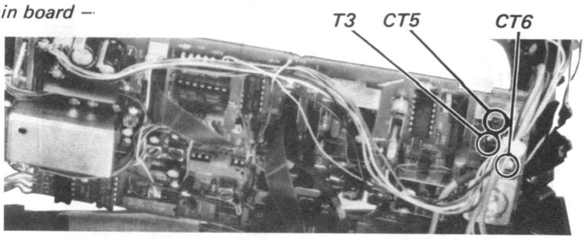

oscilloscope
to VCO1 output of T3
GND
B+
frequency counter
adjustment jumper wire
main board
shield plate (N)

Procedure:

1. Adjust CT5 for a 88.000 MHz or 88.000 MHz ± 300 kHz counter reading.
2. With the adjustment jumper wire connected as is, adjust CT6 for a maximum output level.
3. Unsolder the ground side of the jumper wire set up for adjustments. Connect this end to B+ 3V land. Frequency reading should now be between 50 MHz and 55 MHz.
4. Unsolder the B+ side of the adjustment jumper wire and connect this end to the ground again.
5. Adjust T3 for a maximum output level.
6. Repeat steps 3 through 5 several times until no further improvement is obtained.
7. After the adjustment, remove the adjustment jumper wire and properly install shield plate (N).

Adjustment Location:

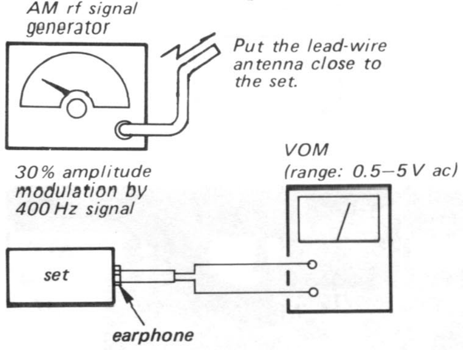
– main board –



AM 1st I-F ALIGNMENT

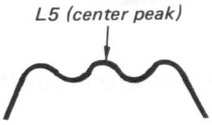
Setup:

Band: AM
Mode: WIDE
Frequency: any
AM RF GAIN control: MAX
VOLUME control: as required


AM rf signal generator
Put the lead-wire antenna close to the set.
30% amplitude modulation by 400 Hz signal
VOM (range: 0.5–5 V ac)
set
earphone

Procedure:

1. Tune in the set to the AM RF SSG frequency.
2. Adjust L5 for a maximum output level.
3. Adjust IFT A1 and L6 alternately for a maximum and synmetrical output level.
4. Final response should be as illustrated below.

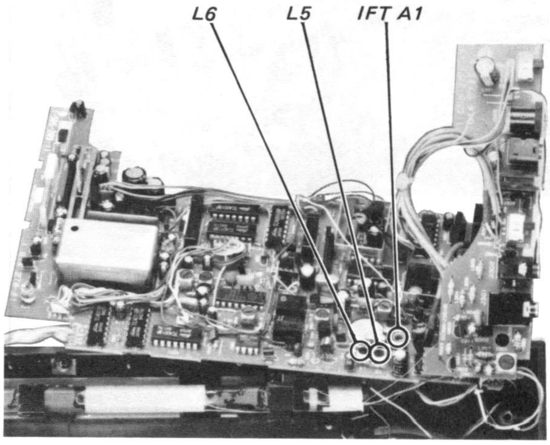


This response can be checked by detuning the set to upper and lower sides of the center frequency in same amount, or by changing SSG frequency with set's frequency unchanged.

5. Repeat above steps several times until no further improvement is obtained.

Adjustment Location

– main board –



AM/AIR 455kHz I-F ALIGNMENT

Note: AIR band is not provided for sets to the Middle Easts, Saudi Arabia, UK, Denmark, Finland, Norway and the Federal Republic of Germany.

Setup:

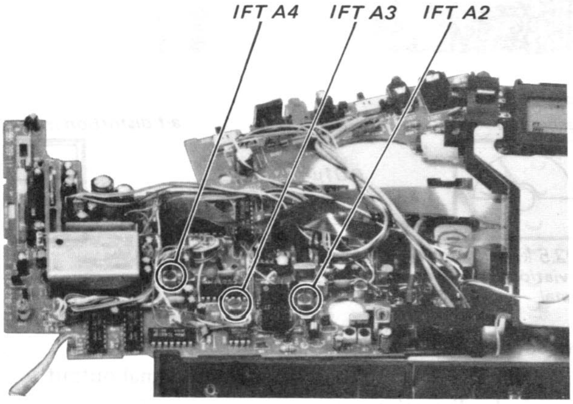
Band: AM
Mode: WIDE
AM RF GAIN control: MAX
VOLUME control: as required

Procedure:

1. Tune in the set to a known, stable and strong AM station.
2. Adjust IFT A2, IFT A3 and IFT A4 for a maximum output level.

Adjustment Location

– main board –

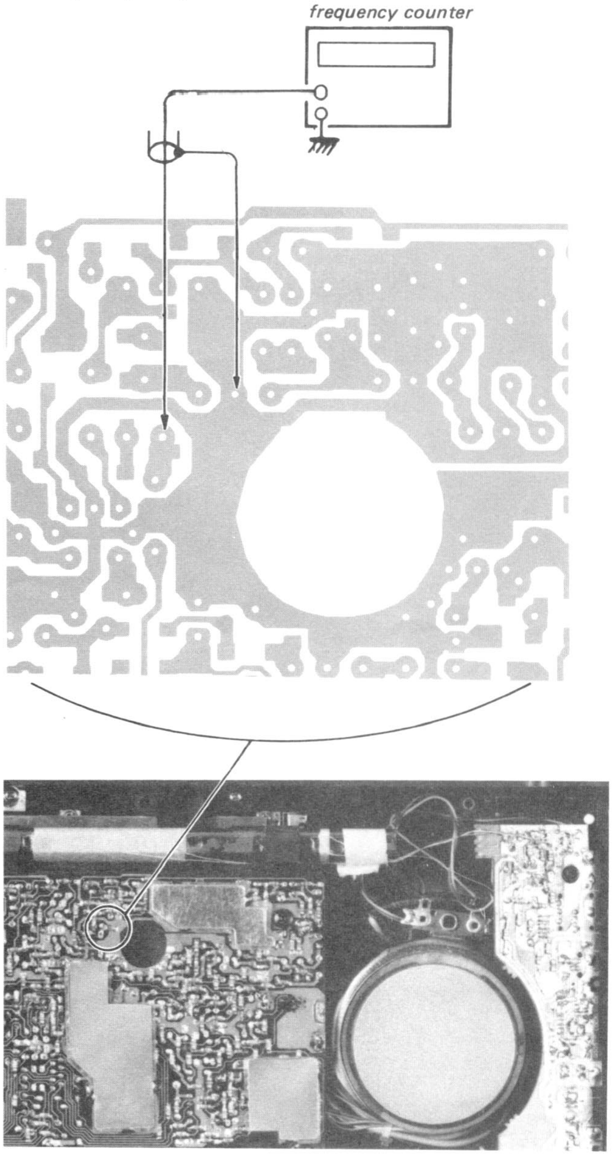


AM/AIR 2nd LOCAL OSC FREQUENCY CHECK

Note: AIR band is not provided for sets to the Middle Easts, Saudi Arabia, UK, Denmark, Finland, Norway and the Federal Republic of Germany.

Setup:

Band: AM or AIR
Mode: any
AM RF GAIN control: MAX
Frequency: any



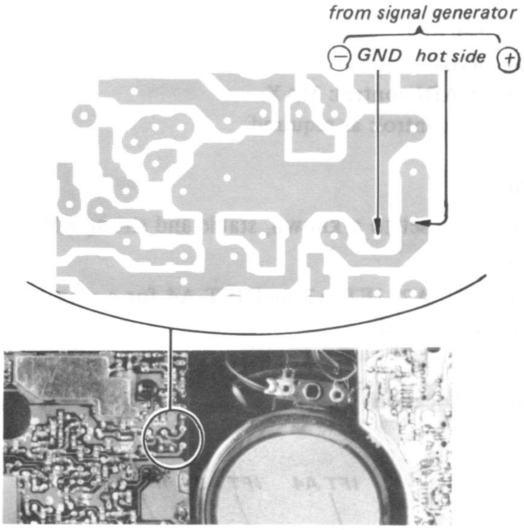
Procedure:

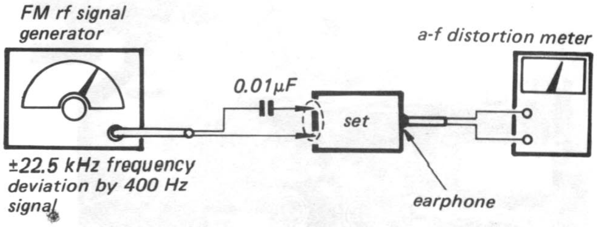
Frequency counter should read 55.390 MHz ± 1 kHz.

FM I-F ALIGNMENT

Setup:

Band switch: FM
Frequency: clear spot
VOLUME control: as desired


from signal generator
⊖ GND
hot side ⊕

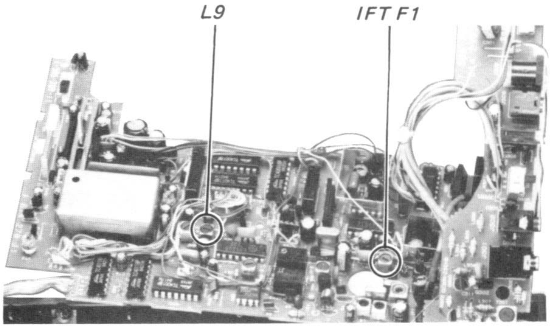

FM rf signal generator
0.01μF
set
a-f distortion meter
±22.5 kHz frequency deviation by 400 Hz signal
earphone

Procedure:

1. Adjust IFT F1 to obtain a maximum signal output with the distortion meter set to level mode.
2. Set the mode of distortion meter to distortion.
3. Adjust L9 to obtain a minimum distortion at the modulating signal 400Hz of the FM RF SSG.
4. Repeat above steps to ensure alignment.

Adjustment Location:

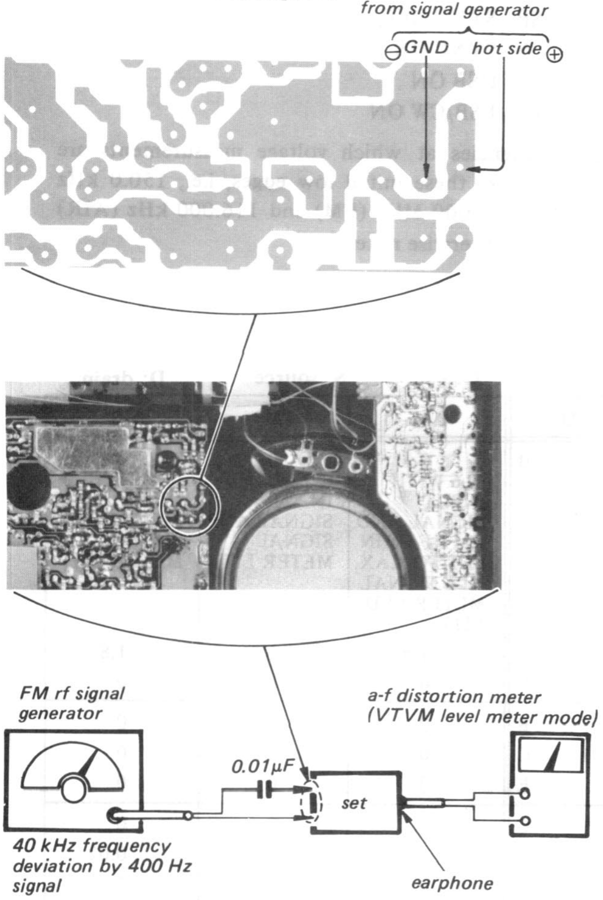
– main board –



FM TRACKING ADJUSTMENT

Setup:

Band switch: FM
Frequency: as required
VOLUME control: as required

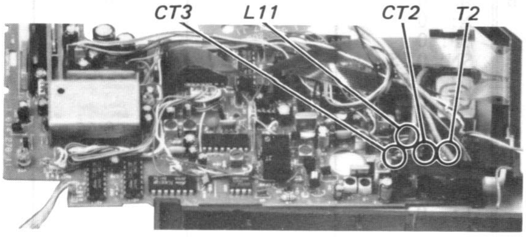

from signal generator
⊖GND
hot side⊕
FM rf signal generator
0.01μF
set
a-f distortion meter (VTVM level meter mode)
40 kHz frequency deviation by 400 Hz signal
earphone

Procedure:

1. RF SSG's and Set's Frequency: 80.000 MHz
   Adjust T2 and L11 for a maximum output level.
2. RF SSG's and Set's Frequency: 106.000 MHz
   Adjust CT2 and CT3 for a maximum output level.
3. Repeat above steps several times ending with trimmers until no further improvement is obtained.

Adjustment Location:

– main board –

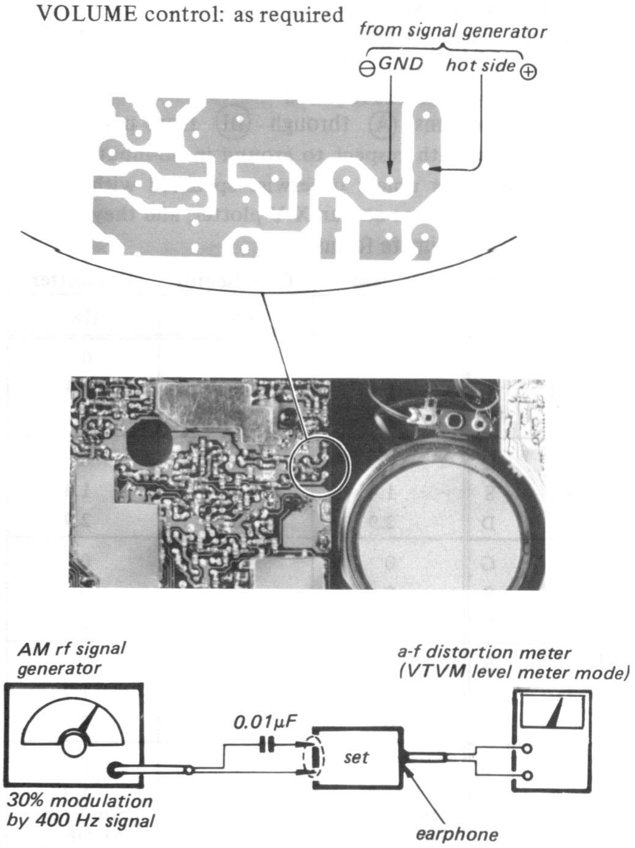

CT3
L11
CT2
T2

AIR TRACKING ADJUSTMENT

Note: AIR band is not provided for sets to the Middle Easts, Saudi Arabia, UK, Denmark, Finland, Norway and the Federal Republic of Germany.

Setup:

Band switch: AIR
Frequency: as required
VOLUME control: as required

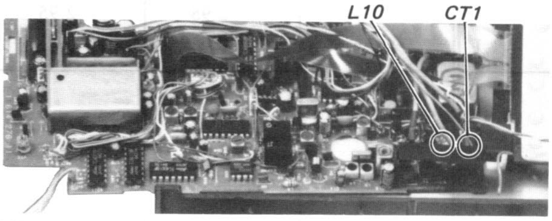

from signal generator
⊖GND
hot side⊕
AM rf signal generator
0.01μF
set
a-f distortion meter (VTVM level meter mode)
30% modulation by 400 Hz signal
earphone

Procedure:

1. RF SSG's and Set's Frequency: 116.000 MHz
   Adjust L10 for a maximum output level.
2. RF SSG's and Set's Frequency: 136.000 MHz
   Adjust CT1 for a maximum output level.
3. Repeat above steps several times ending with CT1 until no further improvement is obtained.

Adjustment Location

– main board –



3-2. VOLTAGE DISTRIBUTION TABLE

Note:

1. Voltages are dc with respect to ground under no-input-signal conditions unless otherwise specified with a VOM (50 kΩ/V).
2. Positions of controls and switches are as follows unless otherwise specified.
   MAIN POWER switch: ON
   POWER switch: ON
   AM ATT switch: DX
   MANUAL TUNE MODE: as required
   TONE control: HIGH
   VOLUME control: MIN
   All key switches: as required
3. Sample waveforms Ⓐ through (BI) from page 53 are taken with respect to ground in no-input-signal conditions unless otherwise specified with a storage oscilloscope and an X-Y plotter, and they represent approximate forms.
4. Voltage variations may be noted due to production tolerances, ±10%.
5. Abbreviations for AM band:
   W: WIDE ON
   N: NARROW ON
   SF: SYNC OFF
   SN: SYNC ON
   U: USB ON
   L: LSB/CW ON
6. Frequencies at which voltage measurements are made are these initial low edges, i.e., 150.0 kHz (AM), 76.000 MHz (FM) and 116.000 kHz (AIR) unless otherwise noted.

Unit: V DC **B: base** **C: collector** **E: emitter**

Q		AM	FM	AIR
Q1	G	0	0	0
	S	1.4	0	1.4
	D	2.9	0	2.9
Q2	G	0	0	0
	S	1.4	0	1.4
	D	2.9	0	2.9
Q3	G	0	0	0
	S	0	0	0
	D	2.8	0	2.8
Q4	B	0	0	0
	C	1.9	0	1.9
	E	0	0	0
Q5	G	0	0	0
	S	1.3 (250mVp-p SINE OF 55,390.0 kHz)	0	1.3 (250mVp-p SINE OF 55,390.0 kHz)
	D	2.5	0	2.5
Q6	B	W: 0.6 N: 0 U: 0 L: 0	0	0
	C	W: 0.1 N: 1.75 U: 1.75 L: 1.75	0	0
	E	0	0	0
Q8	B	0	0	0
	C	2.95	2.95	2.95
	E	0	0	0

G: gate **S: source** **D: drain**

Q		AM	FM	AIR
Q9	B	0.1 (0.6 WITH INPUT SIGNAL AND AM RF GAIN SET TO MAX, ALL SIGNAL METER LED LIT)	0.1 (0.6 WITH INPUT SIGNAL AND SIGNAL METER LIT)	0.1 (0.6 WITH INPUT SIGNAL AND SIGNAL METER LIT)
	C	1.8	1.8	1.8
	E	0	0	0
Q10	B	0	0	0
	C	0	0	0
	E	0	0	0
Q11	G	0	0	0
	S	0	0	0.02
	D	0	0	2.9
Q12	G	0	0	0
	S	0	0	0
	D	0	2.8	0
Q13	B	0	0.65	0
	C	0	1.45	0
	E	0	0	0
Q14	B	0	0.7	0
	C	0	1.9	0
	E	0	0	0
Q15	B	W: 0 N: 0 SF: 0 SN: 0.15 U: 0.55 L: 0.55	0.15	0
	C	W: 0.65 N: 0.65 SF: 0.65 U: 0 L: 0	0.65	0.65
	E	0	0	0

AM MODE: W: WIDE ON, N: NARROW ON, SF: SYNC OFF, SN: SYNC ON, U: USB ON, L: LSB/CW ON

Q		AM	FM	AIR
Q16	B	W: 0 N: 0 SF: 0 SN: 0 U: 0.6 L: 0.6	0	0
	C	W: 2.05 N: 2.05 SF: 2.05 SN: 2.05 U: 0 L: 0	2.05	2.05
	E	0	0	0
Q17	B	W: 2.4 N: 2.4 SF: 2.4 SN: 2.4 U: 2.35 L: 2.35	2.4	2.35
	C	2.95	2.95	2.95
	E	3.0	3.0	3.0
Q18	B	0.6	0.6	0.6
	C	1.0	1.0	1.0
	E	0	0	0
Q19	B	W: 0 N: 1.1 U: 1.1 L: 1.1	0	0
	C	3	3	3
	E	W: 1.45 N: 1.95 U: 1.95 L: 1.95	0	1.45
Q20	B	W: 0.7 N: 0 U: 0 L: 0	0	0.7
	C	3.0	3.0	3.0
	E	W: 1.45 N: 1.95 U: 1.95 L: 1.95	0	1.45
Q21	B	0	0	0
	C	0	0	0
	E	0	0	0
Q22	G	1.0	1.0	1.0
	D	2.8	2.8	2.8
	S	1.3	1.3	1.3
Q23	B	1.2	1.2	1.2
	C	1.2	1.35	2.15
	E	0.55	0.55	0.55
Q24	G	2.0	2.15	2.9
	S	2.25	2.4	3.2
	D	12.6	12.6	12.6
Q25	B	0	0	0
	C	0.62	0.62	0.62
	E	0	0	0

Q		AM	FM	AIR
Q26	G	0	0.2	0
	S	0	NOT MEASURABLE WITH VOM	0
	D	0	2.8	0
Q27	B	2.15	2.8	2.15
	C	2.75	0	2.75
	E	2.8	2.8	2.8
Q28	G	0	0	0
	S	0.3	0	0.3
	D	2.3 (AT 150 kHz: 3Vp-p SINE OF 57,279.0 kHz. AT 29,999.9 kHz: 580mVp-p SINE OF 85,845.6 kHz)	0	2.3 (AT 116 MHz 3Vp-p SINE OF 60,155.7 kHz. AT 136 MHz 1Vp-p SINE OF 80,155.7 kHz)
Q29	B	0.7	0	0.7
	C	2.1 (AT 150 kHz 720mVp-p SINE OF 57,279 kHz. AT 29,999.9 kHz 510mVp-p SINE OF 85,845.6 kHz)	0	2.1 (AT 116 MHz 640mVp-p SINE OF 60,155.7 kHz. AT 136 MHz 530mVp-p SINE OF 80,155.7 kHz)
	E	0	0	0
Q30	B	0.7 (40mVp-p SINE)	0.7	0.7 (SINE 3mVp-p)
	C	1.0 (AT 150 kHz 730mVp-p SINE OF 5,625.0 kHz. AT 29,999.9 kHz 220mVp-p SINE OF 21.607.0 kHz)	0	1.0 (AT 116 MHz 300mVp-p SINE OF 11,490.0 kHz. AT 136 MHz 220mVp-p SINE OF 17,659.0 kHz)
	E	0	0	0
Q31	G	1.3 (AT 150 kHz 120mVp-p OF 50,370.6 kHz)	0	1.25 (AT 116 MHz 130mVp-p OF 46,596.0 kHz)
	S	1.45	0	1.45
	D	2.6	0	2.6

AM MODE: W: WIDE ON, N: NARROW ON, SF: SYNC OFF, SN: SYNC ON, U: USB ON, L: LSB/CW ON

Q		AM	FM	
Q32	B	0.6	0	0.6
	C	0.7 (AT 150 kHz 420mVp-p SINE OF 50,370.661 kHz. AT 29,999.9 kHz 420mVp-p SINE OF 50,345.561 kHz)	0	1.5 (AT 116-136 MHz 380mVp-p SINE OF 46,605.653 kHz)
	E	0	0	0
Q33	G	0	0	0
	S	0.2	0	0.2
	D	2.6	0	2.6
Q34	B	0.7	0	0.7
	C	1.3	0	1.3
	E	0 (FIXED 55,390.0 kHz SINE OF 240mVp-p)	0 (SAME AS AM)	0 (SAME AS AM)
Q35	B	2.4	2.4	2.4
	C	0	2.9	0
	E	3.0	3.0	3.0
Q36	B	0.35	1.4	0.35
	C	2.3	0	2.3
	E	0	0	0
Q37	B	2.4	2.4	2.4
	C	0	0	3.0
	E	3.0	3.0	3.0
Q38	B	0	0	2.9
	C	2.4	2.4	0
	E	0	0	0
Q39	B	2.3	3.0	2.3
	C	2.9	0	2.9
	E	3.0	3.0	3.0
Q40	B	3.8	3.8	3.8
	C	4.4	4.4	4.4
	E	4.5	4.5	4.5
Q41	B	3.8	3.8	3.8
	C	4.4	4.4	4.4
	E	4.5	4.5	4.5
Q42	B	0.65	0.65	0.65
	C	0.05	0.05	0.05
	E	0	0	0
Q43	B	0.62	0.62	0.62
	C	MOMENTARILY 0.5 WHEN KEYED IN, 0 AFTERWARDS.	SAME AS AM.	SAME AS AM.
	E	0	0	0

Q		AM	FM	AIR
Q44	B	W, N, SF: 0-2.45 CHANGING (NOISE). SN: WITH INPUT SIGNAL AND D411 (UPPER) LIT: 0V D412 (LOWER) LIT 2.45 V	0 OR 2.45 DEPENDING UPON TIMING OF KEYING IN.	0
	C	W, N, SF: 0-2.45 CHANGING (NOISE). SN: WITH INPUT SIGNAL AND D411 (UPPER) LIT: 2.45, D412 (LOWER) LIT: 0V	2.45 OR 0 DEPENDING UPON TIMING OF KEYING IN.	0
	E	0	0	0
Q45	B	0	0	0
	C	1.8	0	1.8
	E	0	0	0
Q46	B	3.7	3.7	3.7
	C	2.8	2.8	2.8
	E	4.4	4.4	4.4
Q47	B	0.6	0.6	0.6
	C	0.6	0.6	0.6
	E	0	0	0
Q48	B	0.6	0.6	0.6
	C	3.4	3.6	3.4
	E	0	0	0
Q301	B	0	0	0
	C	2.0	0	0
	E	0	0	0
Q302	G	0	0	0
	S	0.1	0	0
	D	2.9	0	0
Q303	G	0	0	0
	S	0.2	0	0
	D	2.9	0	0
Q304	B	2.2	2.3	0
	C	2.9	0	0
	E	2.9	0	2.9
Q305	B	0	0.55	0.6
	C	0.65	0	0
	E	0	0	0
Q306	B	0	0	2.2
	C	0.65	0	0
	E	0	0	0

Q		AM	FM	AIR
Q401	B	2.1	2.1	2.1
	C	W: 0 N: 0 SF: SYNC LED OFF: 2.9 SYNC LED ON WITH INPUT SIGNAL: 2.75	0	0
	E	2.95	2.95	2.95
Q501	B	D501 (LIGHT) OFF: 0 ON: 0.75	SAME AS AM	SAME AS AM
	C	D501 (LIGHT) OFF: 2.75 ON: 0.15		
	E	0	0	0
Q502	B	2.35	2.35	2.35
	C	0	0	0
	E	2.95	2.95	2.95
Q504	B	0	0	0
	C	1.8	1.8	1.8
	E	0	0	0
Q601	B	W: 0 N: 0 U: 2.85 L: 2.85	0	0
	C	U: 0 L: 0	0	0
	E	0	0	0
Q602	B	0	0	2.9
	C	SN, U, L: 1.8 W, N, SF: 0	1.8	0
	E	0	0	0
Q603	B	0.95 (1.3Vp-p SINE OF 3.64 MHz)	0.95 (SAME AS AM)	0.95 (SAME AS AM)
	C	2.7	2.7	2.7
	E	0.9	0.9	0.9
Q701	B	0	0	0
	C	0.6	0.6	0.6
	E	0	0	0
Q702	B	0.6	0.6	0.6
	C	6.0	6.0	6.0
	E	0	0	0

IC	PIN	AM	FM	AIR
IC1	1	NOT USED.	NOT USED.	NOT USED.
	2	0	0.7	0
	3	0	0	0
	4	0	1.2	0
	5	0	1.7	0
	6	0.1	2.8	0.1
	7	2.8	2.8	2.8
	8	0	1.7	0
	9	0	0	0
	10	0.7	1.1	0.7
	11	0.65	0.55	0.65
	12	2.7	0	2.7
	13	0.6	0.6	0.6
	14	0.05 (1.1 WITH AM RF GAIN MAX AND ALL SIGNAL METER LEDS LIT)	0.05	0.05
	15	2.7	0	2.7
	16	0.6	0.55	0.6
IC2	1	0	0	0
	2	1.35	1.35	1.35
	3	0.5 (3V RANGE)	0.5 (3V RANGE)	0.5 (3V RANGE)
	4	0	0	0
	5	0.55	0.55	0.55
	6	0.5 (3V RANGE)	0.5 (3V RANGE)	0.5 (3V RANGE)
	7	0	0	0
	8	3.0	3.0	3.0
IC3	1	W, N, SF: 0-2.45 CHANGING WITH NOISE INPUT. SN, U, L: 0 OR 2.45 DEPENDING UPON TIMING OF KEYING IN (MORE "L" OR MORE "H")	0 OR 2.45	0
	2	W, N: 0.85 SN: 0.55 U, L: 0.35	0.55	1.0
	3	1.4	1.45	1.4
	4	0	0	0
	5	1.45	1.45	1.45
	6	W, N, SF, SN: 0.65 U, L: 0	0.65	0.65
	7	W, N: 1.7 SN: 1.1 U, L: 2.55 MEMORY ON: 0 MEMORY ON: MOMENTARILY 1.1	MOMENTARILY 1.6	MOMENTARILY 1.6
	8	3.0	3.0	3.0

IC	PIN	AM	FM	AIR
IC4	1	−0.75 (3V RANGE)	−0.75 (3V RANGE)	−0.75 (3V RANGE)
	2	2.95	2.95	2.95
	3	0	0	0
	4	0 (SAME AS PIN11 OF IC506)	0 (SAME AS PIN11 OF IC506)	0 (SAME AS PIN11 OF IC506)
	5	SINE 1.3Vp-p (NOT MEASURABLE WITH VOM)	SINE 1.3Vp-p (NOT MEASURABLE WITH VOM)	SINE 1.3Vp-p (NOT MEASURABLE WITH VOM)
	6	1.3 (SINE 2.15Vp-p)	1.3 (SINE 2.15Vp-p)	1.3 (SINE 2.15Vp-p)
	7	1.0	1.0	1.0
	8	0	0	0
	9	NOT USED.	NOT USED.	NOT USED.
	10	0.1	0.25	0.1
	11	0.25	0.15	0.25
	12	2.6	2.6	2.6
	13	NOT USED.	NOT USED.	NOT USED.
	14	0	0	0
IC5	1	2.75	0	2.75
	2	2.55 (AT 150 kHz 60mVp-p SIGNAL)	0 0	2.55 (AT 116 MHz 40mVp-p SIGNAL)
	3	2.0	0	2.0
	4	0	0	0
	5	1.15 (AT 150 kHz 280mVp-p SINE. AT 29,999.9 kHz 320mVp-p SINE.)	0	1.15 (AT 116 MHz 280mVp-p SINE. AT 136 MHz 320mVp-p SINE.)
	6	1.15	0	1.15
	7	1.1 (AT 150 kHz, 70mVp-p SINE. AT 29,999.9 kHz, 80mVp-p SINE)	0	1.1 (AT 116 MHz, 55mVp-p SINE. AT 136 MHz, 70mVp-p SINE)

IC	PIN	AM	FM	AIR
IC6	1	−0.7	0	0.7
	2	2.95	0	2.95
	3	0	0	0
	4	0	0	0
	5	1.3 (800mVp-p SINE SIGNAL)	0 (800mVp-p SINE SIGNAL)	1.3 (800mVp-p SINE SIGNAL)
	6	1.1 (2Vp-p SINE)	0	1.1 (2Vp-p SINE)
	7	1.3 (65mVp-p SAWTOOTH)	0	1.25 (65mVp-p SAWTOOTH)
	8	0	0	0
	9	0	0	0
	10	0.1	0	0.1
	11	0.25	0	0.25
	12	2.75	0	2.75
	13	0.25 (AT 150 kHz, 170mVp-p SINE SIGNAL OF 5020 kHz. AT 29,999.9 kHz, 190mVp-p SINE SIGNAL OF 5271 kHz.)	0	0.25 (AT 116 MHz, 190mVp-p SINE SIGNAL OF 8785 kHz. AT 136 MHz, 210mVp-p SINE SIGNAL OF 8785 kHz.)
	14	0	0	0
IC7	1	2.7	0	2.7
	2	2.5 (150mVp-p SIGNAL)	0	2.5 (55mVp-p SIGNAL)
	3	1.95	0	1.95
	4	0	0	0
	5	1.1 (AT 150 kHz, 560mVp-p SINE OF 50,370.6 kHz. AT 29,999.9 kHz, 560mVp-p SINE OF 50,345.5 kHz.)	0	1.1 (CONSTANT 410mVp-p SINE SIGNAL OF 46,605.66 kHz.)
	6	1.1	0	1.1
	7	1.1 (190mVp-p SINE OF 55,391.15 kHz)	0	1.1 (190mVp-p SINE OF 55,391.15 kHz)
IC9	1	4.4	4.4	4.4
	2	0	0	0
	3	3.0	3.0	3.0

AM MODE: W: WIDE ON, N: NARROW ON, SF: SYNC OFF, SN: SYNC ON, U: USB ON, L: LSB/CW ON

IC	PIN	AM	FM	AIR
IC10	1, 3	W, N: 1.1 SF: 1.55 SN: 0.7 U, L: 1.4 (SF WITH MAX AM RF GAIN AND TUNED IN A STATION, 880mVp-p SIGNAL.)	0.7	1.1
	2	W, N, SN: 0.7 U, L: 0.45	0.7	1.1
	4	1.5	1.5	1.5
	5	W, N, SN: 0 U, L: 2.85	0	0
	6	W, N, SF, U: 1.7 SN, L: 0	0	1.7
	7	0	0	0
	8–11	0.3	0.3	0.3
	12	W, N, SF, SN, U: 0 L: 1.8	1.8	0
	13	W, N, SF, SN: 2.95 U, L: 0	2.95	2.95
	14	3.0	3.0	3.0
IC11	1	0	0	0
	2	2.95	2.95	2.95
	3	0 SAMPLE WAVEFORM: (BH)	0 SAMPLE WAVEFORM: (BH)	0 SAMPLE WAVEFORM: (BH)
	4	2.95	2.95	2.95
	5	0	2.95	2.95
	6	2.95	0	0
	7	0	0	0
	8	W, N, SF, U: 0 SN, L: 2.95	2.95	0
	9	W, N, SF, U: 2.95 SN, L: 0	0	2.95
	10	W, N, SF, SN: 2.95 U, L: 0	2.95	2.95
	11	W, N, SF, SN: 0 U, L: 2.85	0	0
	12	W, N, SF, U: 0 SN, L: 2.95	0	0
	13	W, N, SF, U: 2.95 SN, L: 0	0	2.95
	14	3.0	3.0	3.0

IC	PIN	AM	FM	AIR
IC12	1	0	0	0
	2	1.8	1.8	1.8
	3	0	0	0
	4	W, N, SF, U, L: 0 SN: 2.95	2.95	0
	5	U, L: 2.85 OTHERS: 0	0	0
	6	SN, U, L: 0 SF: 2.9	0	2.85
	7	0	0	0
	8	W, N, SF, U, L: 2.95 SN: 0	0	2.95
	9	W, N, SF, SN: 2.95 U, L: 0	2.95	2.95
	10	0	0	0
	11	2.95	2.95	2.95
	12	0	0	0
	13	0	0	0
	14	3.0	3.0	3.0
IC13	1	2.95	0	0
	2	0.35	1.4	0.35
	3	0	0	2.9
	4	0	2.95	2.95
	5	LW: 3 MW: 0 SW: 3	0	0
	6	LW: 0 MW: 3 SW: 3	0	0
	7	0	0	0
	8	0.35	2.9	0.35
	9	2.95	0	0
	10	W: 2.4 N, U, L: 0 PRIORITY: W/N	0	2.4
	11	W, N, SF, U, L: 0 SN: 2.95	2.95	0
	12	W, N, SF, SN: 0 U, L: 2.85 PRIORITY: SSB	0	0
	13	W, N, SF, U: 2.95 SN, L: 0	0	2.95
	14	3.0	3.0	3.0

AM MODE: W: WIDE ON, N: NARROW ON, SF: SYNC OFF, SN: SYNC ON, U: USB ON, L: LSB/CW ON

IC	PIN	AM	FM	AIR
IC14	1	3.0	3.0	3.0
	2	W, N, SF, U, L: 0 SN: 2.95	2.95	0
	3	W, N, SF, U, L: 2.95 SN: 0	0	2.95
	4, 9	W, N, SF, SN: 2.95 U, L: 0	2.95	2.95
	5, 11	2.95	2.95	2.95
	6, 10	W, N, SF: 0 U, L: 2.95	0	0
	12	W, N, SF: 2.9 SN, U, L: 0.5	0.5	2.9
	13	WHEN BAND IS CHANGED TO AM, MOMENTARILY 1.7. SN: MOMENTARILY 1.1. U, L: 2.55	WHEN BAND IS CHANGED TO FM, MOMENTARILY 1.6.	WHEN BAND IS CHANGED TO AIR, MOMENTARILY 1.6.
	14	3.0	3.0	3.0
IC15	1	WHEN BAND IS CHANGED TO AM, MOMENTARILY 1.7. SN: MOMENTARILY 1.1 U, L: 2.55	WHEN BAND IS CHANGED TO FM, MOMENTARILY 1.6.	WHEN BAND IS CHANGED TO AIR, MOMENTARILY 1.6.
	2, 4	W, N, SF: 0 SN, U, L: 2.95	2.95	0
	3	W, N, SF: 2.95 ↓ U, L: 0	2.95	2.95
	5, 6	W, N, SF: 2.9 SN, U, L: 0.5	0.5	2.9
	7	0	0	0
	8, 11	2.95	2.95	2.95
	9, 13	0	0	0
	10	2.95	2.95	2.95
	12	W, N, SF: 0-2.45 CHANGING (NOISE). SN: WITH INPUT SIGNAL AND D411 (UPPER) LIT: 2.45, D412 (LOWER) LIT: 0V	2.45 OR 0 DEPENDING UPON TIMING OF KEYING IN.	0
	14	3.0	3.0	3.0

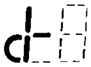
IC	PIN	AM	FM	AIR
IC16	1	W, N, SF: 0-2.45 CHANGING (NOISE). SN: WITH INPUT SIGNAL AND D411 (UPPER) LIT: 2.45, D412 (LOWER) LIT: 0V	2.45 OR 0 DEPENDING UPON TIMING OF KEYING IN,	0
	2	W, N, SF, U, L: 0 SN: 2.95	2.95	0
	3, 12	W, N, SF, U, L: 2.95 SN: 0	0	3.0
	4	0	0	0
	5, 6, 10	3.0	3.0	3.0
	7	0	0	0
	8	LW: 0 MW: 3 SW: 3	0	0
	9	W, N, SF, SN, U: 1.8 L: 0	0 OR 1.8	1.8
	11	W, N, SF, U: 2.95 SN, L: 0	0	2.95
	13	W, N, SF, U: 0 SN, L: 2.95	2.95	0
	14	3.0	3.0	3.0
IC17	1	0.7	0.7	0.7
	2	0	0	0
	3	0.55	0.55	0.55
	4	NOT USED	NOT USED	NOT USED
	5	0	0	0
	6	2.25	2.25	2.25
	7	4.4	4.4	4.4
	8	4.4	4.4	4.4
	9	4.4	4.4	4.4

FOR SAMPLE WAVEFORMS, SEE PAGES FROM 53.

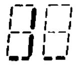
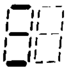
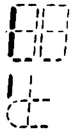
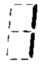
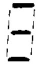
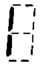
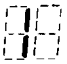
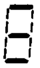
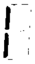
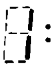
IC	PIN	AM	FM	AIR
IC401	1	0	0	0
	2	0 (0.02 WITH MAX AM RF GAIN)	0	0
	3	0.05	0.05	0.05
	4	1.6 (1.35 WHEN D405 LIT)	1.6 (1.35 WHEN D405 LIT)	1.6 (1.35 WHEN D405 LIT)
	5	1.6 (1.35 WHEN D404 LIT)	1.6 (1.35 WHEN D404 LIT)	1.6 (1.35 WHEN D404 LIT)
	6	1.6 (1.35 WHEN D403 LIT)	1.6 (1.35 WHEN D403 LIT)	1.6 (1.35 WHEN D403 LIT)
	7	1.6 (1.35 WHEN D402 LIT)	1.6 (1.35 WHEN D402 LIT)	1.6 (1.35 WHEN D402 LIT)
	8	1.6 (1.35 WHEN D401 LIT)	1.6 (1.35 WHEN D401 LIT)	1.6 (1.35 WHEN D401 LIT)
	9	1.6 (1.35 WHEN D406 LIT)	1.6 (1.35 WHEN D406 LIT)	1.6 (1.35 WHEN D406 LIT)
	10	2.0 (1.35 WHEN D407 LIT)	2.0 (1.35 WHEN D407 LIT)	2.0 (1.35 WHEN D407 LIT)
	11	1.6 (1.35 WHEN D408 LIT)	1.6 (1.35 WHEN D408 LIT)	1.6 (1.35 WHEN D408 LIT)
	12	1.6 (1.35 WHEN D409 LIT)	1.6 (1.35 WHEN D409 LIT)	1.6 (1.35 WHEN D409 LIT)
	13	1.6 (1.35 WHEN D410 LIT)	1.6 (1.35 WHEN D410 LIT)	1.6 (1.35 WHEN D410 LIT)
	14	1.25	1.25	1.25
	15	2.95	2.95	2.95
	16	1.2	1.2	1.2
IC501	1	0	0	0
	2	2.95 (WAVEFORM Ⓗ)	2.95 (WAVEFORM Ⓗ)	2.95 (WAVEFORM Ⓗ)
	3	2.95 (WAVEFORM Ⓘ)	2.95 (WAVEFORM Ⓘ)	2.95 (WAVEFORM Ⓘ)
	4	2.95 (WAVEFORM Ⓙ)	2.95 (WAVEFORM Ⓙ)	2.95 (WAVEFORM Ⓙ)
	5	0 (0.2 DURING TURNING TUNING KNOB)	0 (0.2 DURING TURNING TUNING KNOB)	0 (0.2 DURING TURNING TUNING KNOB)
	6	0	0	0
	7	0.4 (0.55 DURING TURNING TUNING KNOB)	0.4 (0.55 DURING TURNING TUNING KNOB)	0.4 (0.55 DURING TURNING TUNING KNOB)
	8	2.95 (0 WHEN POWER SWITCH S502 SET TO OFF OR TIMER)	2.95 (0 WHEN POWER SWITCH S502 SET TO OFF OR TIMER)	2.95 (0 WHEN POWER SWITCH S502 SET TO OFF OR TIMER)

IC	PIN	AM	FM	AIR
IC501	9	0 (ALSO 0 WHEN POWER SWITCH S502 SET TO OFF. 2.95 WHEN POWER SWITCH S502 SET TO TIMER)	0 (SAME AS AM)	0 (SAME AS AM)
	10	0 (CHANGING ABOUT 2.75 DURING TURNING TUNING KNOB)	0 (SAME AS AM)	0 (SAME AS AM)
	11	0	0	0
	12	0 (2.2 WHEN ENTER, SHIFT, SKIP, PT1-3 OR PT4 KEY KEPT DEPRESSED. 0 WHEN OTHER KEYS KEPT DEPRESSED. WAVEFORMS Ⓟ, Ⓠ, Ⓡ, Ⓢ, Ⓣ, Ⓤ AND Ⓥ WHEN ENTER, SHIFT, SKIP, PT1-3 OR PT4 KEYED IN RESPECTIVELY)	0 (SAME AS AM)	0 (SAME AS AM)
	13	0 (2.6 WHEN ANY BAND/MODE KEY OR ANY MEMORY KEY b1-b8, c1-c8 OR d1-d8 KEYED IN OR KEPT DEPRESSED. SAMPLE WAVEVORMS Ⓦ, Ⓧ, Ⓨ, Ⓩ. CENTER PULSE MOVES FROM LEFT TO RIGHT PROPERLY 8 TIMES, I.E, 8-BIT SYSTEM AS BAND/MODE IS KEYED IN FROM LEFT (AIR) TO RIGHT (LSB/CW) OR FOR EXAMPLE b1-b8. BACKS TO 0 WHEN ABOVE DEPRESSED KEY IS RELEASED)		
	14	0 (2.6 WHEN ANY KEY OF BANDS, AM MODES, OPERATION TIME, a1-a8, d1-d8 KEPT DEPRESSED, AND 0 WHEN RELEASED) SAMPLE WAVEFORMS WHEN KEYED IN: AIR, a1, d1: Ⓦ N, a5, d5: (AA) FM, a2, d2: Ⓧ SN, a6, d6: (AB) AM, a3, d3: Ⓨ U, a7, d7: (AC) W, a4, d4: Ⓩ L, a8, d8: (AD)		

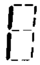
FOR SAMPLE WAVEFORMS, SEE PAGES FROM 53.

IC	PIN	
IC501	15	0 (COMMON FOR ALL BANDS AND MODES) (2.6 WHEN ANY BAND/MODE KEY OR ANY OF MEMORY KEYS a1-a8, c1-c8, OR ANY OF TEN KEYS 0-7 KEYED IN (MOMENTARILY) OR KEPT DEPRESSED, AND BACKS TO 0 WHEN RELEASED) SAMPLE WAVEFORMS WHEN KEYED IN FROM LEFT TO RIGHT: AIR, 0, a1, c1: Ⓦ N, 4, a5, c5: (AA) FM, 1, a2, c2: Ⓧ SN, 5, a6, c6: (AB) AM, 2, a3, c3: Ⓨ U, 6, a7, c7: (AC) W, 3, a4, c4: Ⓩ L, 7, a8, c8: (AD)
	16	2.95. SAMPLE WAVEFORM: Ⓝ
	17	2.95. SAMPLE WAVEFORM: Ⓜ
	18	2.95. SAMPLE WAVEFORM: Ⓛ
	19	2.95. SAMPLE WAVEFORM: Ⓚ
	20	1.25 MICROCOMPUTER CLOCK. SAMPLE WAVEFORM: (AJ)
	21	1.0. MICROCOMPUTER CLOCK. SAMPLE WAVEFORM: (AK) (VOM IS NOT USABLE)
	22	0 (ALL BANDS)
	23	0 (ALL BANDS)
	24	0.7 (ALL BANDS)
	25	1.4 (ALL BANDS)
	26	2.95 (ALL BANDS)
	27	NOT USED, BUT 1.1 (ALL BANDS)
	28	1.3 (ALL BANDS) SAMPLE WAVEFORM: Ⓓ. DRIVES COMMON ELECTRODE FOR PM, PT1, PT2, PT4, 0, 15, 30, 60 ETC.
	29	1.25 (ALL BANDS/MODES). SAMPLE WAVEFORM: Ⓓ. DRIVES COMMON ELECTRODE FOR AM AND SEGMENTS a, d, e AND g OF FOURTH DIGIT OF CLOCK, ETC.
	30	1.25 (ALL BANDS/MODES). SAMPLE WAVEFORM: Ⓓ. DRIVES SEGMENTS a, b AND g OF TIMER-SIDE FIGURES.
	31	NOT USED, BUT 1.05 (ALL BANDS).
	32	NOT USED, BUT 1.05 (ALL BANDS).
	33	0.7, SAMPLE WAVEFORM: Ⓔ. DRIVES SEGMENTS b AND c OF TIMER'S MEMORY CH FIGURE OF DISPLAY. PT1-PT4 KEPT DEPRESSED: 1.4, SAMPLE WAVEFORM Ⓑ. ANY ONE OF PT1-PT4 KEYS AND ANY ONE OF 15-60 MIN KEY ARE KEPT DEPRESSED SIMULTANEOUSLY. 1.25, SAMPLE WAVEFORM: Ⓒ PT1 KEPT DEPRESSED . . . .SAMPLE WAVEFORM Ⓑ ↓ ↓ 30 MIN KEYED IN DEPRESSING PT1 . . . . . . Ⓒ ↓ ↓ a1, b1, c1, d1, a3, b3, c3, d3, a4, b4, c4, d4, a7, b7, c7, d7, a8, b8, c8, d8 KEYED IN . . . . UNCHANGED Ⓒ ↓ ↓ a2, b2, c2, d2, a5, b5, c5, d5, a6, b6, c6, d6 KEYED IN . . . . Ⓐ
IC501	34	0.7, SAMPLE WAVEFORM: Ⓔ. DRIVES SEGMENTS a, d AND g OF TIMER'S MEMORY CH FIGURE. PT1 KEPT DEPRESSED . . . .SAMPLE WAVEFORM Ⓔ ↓ ↓ DEPRESSING PT1, UNCHANGED a) a1-d1 KEYED IN . . . .Ⓔ ↓ ↓ b) a2-d2, a3-d3, a5-d5, a6-d6, a8-d8 KEYED IN . . . . . .Ⓑ ↓ ↓ c) a4-d4, a7-d7 KEYED IN . . . .Ⓐ
	35	0.7, SAMPLE WAVEFORM: E . DRIVES SEGMENTS e AND f OF TIMER'S MEMORY CH FIGURE AND ONE SEGMENT OF LETTERS a AND d OF MEMORY CH DISPLAY. DEPRESSING PT1, a) a1, a3, a7, b2-d2, b4-d4 b5-d5 KEYD IN . . . . . .SAMPLE WAVEFORM Ⓐ b) a6 OR a8 KEYED IN . . . .Ⓑ c) a2, a4, a5, b6-d6, b8-d8 . . . .Ⓒ KEYED IN d) b1-d1, b3-d3, b7-d7 KEYED IN . . . . . .Ⓔ
	36 	0.7, SAMPLE WAVEFORM: Ⓔ. DRIVES THREE SEGMENTS OF LETTER d AND TWO SEGMENTS OF LETTER a, AND HYPHEN SEGMENT OF TIMER'S MEMORY CH DISPLAY. DEPRESSING ANY OF PT1-PT4, a) a1-a8, b1-b8 KEYED IN . . . . .SAMPLE WAVEFORM Ⓒ b) c1-c8 KEYED IN . . . .Ⓐ c) d1-d8 KEYED IN . . . . . .Ⓑ
	37 TIMER	DRIVES SEGMENTS b AND c OF FIRST DIGIT OF TIMER'S SLEEP TIME FIGURE. 1. POWER SWITCH (S502): TIMER 0.7, SAMPLE WAVEFORM: Ⓔ 2. SLEEP KEY KEYED IN; a) 60 MIN OR 30 MIN DISPLAYED . . . . . . .SAMPLE WAVEFORM Ⓒ b) 15 MIN DISPLAYED . .Ⓐ
	38	DRIVES SEGMENTS a, d AND g OF FIRST DIGIT OF TIMER'S SLEEP TIME FIGURE. 1. POWER SWITCH (S502): TIMER 0.7, SAMPLE WAVEFORM: Ⓔ 2. SLEEP KEY KEYED IN; a) 60 MIN OR 30 MIN DISPLAYED . . . . . . .SAMPLE WAVEFORM Ⓒ b) 15 MIN DISPLAYED. . Ⓑ
	39 MIN	DRIVES SEGMENTS e AND f OF FIRST DIGIT OF TIMER'S SLEEP TIME AND LETTERS "MIN". 1. POWER SWITCH (S502): TIMER 0.7, SAMPLE WAVEFORM: Ⓔ 2. SLEEP KEY KEYED IN; a) 60 MIN OR 30 MIN DISPLAYED . . . . . . .SAMPLE WAVEFORM Ⓑ b) 15 MIN DISPLAYED. . Ⓒ

FOR SAMPLE WAVEFORMS, SEE PAGES FROM 53.

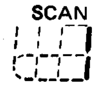
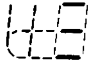
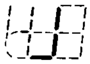
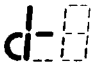
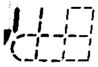
IC PIN	
IC501 40 TIMER 	DRIVES SEGMENTS b AND c OF SECOND DIGIT OF TIMERS SLEEP TIME FIGURE AND LETTERS "TIMER". 1. POWER SWITCH (S502): TIMER 0.7, SAMPLE WAVEFORM: Ⓔ 2. SLEEP KEY KEYED IN; a) 60 MIN DISPLAYED . . . . . . SAMPLE WAEVFORM Ⓐ b) 30 MIN OR 15 MIN DISPLAYED. . Ⓒ
41 	DRIVES SEGMENTS a, d and g OF SECOND DIGIT OF TIMER'S SLEEP TIME FIGURE. 1. POWER SWITCH (S502): TIMER 0.7, SAMPLE WAVEFORM: Ⓔ 2. SLEEP KEY KEYED IN; a) 60 MIN OR 30 MIN DISPLAYED . . . . SAMPLE WAVEFORM Ⓑ b) 15 MIN DISPLAYED. . Ⓔ
42 	DRIVES SEGMENTS e AND f OF SECOND DIGIT OF TIMER'S SLEEP TIME FIGURE AND ONE SEGMENT OF TIMER'S MEMORY CH LETTER "b". 1. POWER SWITCH (S502): TIMER 0.7, SAMPLE WAVEFORM: Ⓔ 2. SLEEP KEY KEYED IN; a) 60 MIN DISPLAYED. . . SAMPLE WAVEFORM Ⓒ b) 30 MIN OR 15 MIN DISPLAYED . . . . . . Ⓔ
43 : PT3 15	DRIVES CLOCK'S COLON, "PT3" AND FIGURES "15". 1.05, SAMPLE WAVEFORM: Ⓐ (UNCHANGES)
44  60	DRIVES SEGMENTS b AND c OF FIRST DIGIT OF CLOCK'S FIGURE, AND FIGURE "60". 1. POWER ON AND INITIAL CLOCK DISPLAY 0:00. 1.25, SAMPLE WAVEFORM Ⓒ. 2. WHEN FIGURE OF FIRST DIGIT CHANGED AS CLOCK TIME ADVANCES, a) FIGURES 2, 5 AND 6 DISPLAYED . . . . . SAMPLE WAVEFORM Ⓐ b) FIGURES 0, 1, 3, 4, 7-9 DISPLAYED . . . . Ⓒ
45 	DRIVES SEGMENTS a, d AND g OF FIRST DIGIT OF CLOCK'S FIGURE. 1. POWER ON AND INITIAL CLOCK DISPLAY 0:00. 1.25, SAMPLE WAVEFORM Ⓒ. 2. WHEN FIGURE OF FIRST DIGIT CHANGED AS CLOCK TIME ADVANCES, a) FIGURE 0 DISPLAYED . . . . SAMPLE WAVEFORM Ⓒ b) FIGURE 1 DISPLAYED . . . . . . Ⓔ c) FIGURE 2, 3, 5, 6, 8 AND 9 DISPLAYED . . . . . . Ⓑ d) FIGURES 4 AND 7 DISPLAYED . . . . . Ⓐ
IC501 46 SLEEP 	DRIVES SEGMENTS e AND f OF FIRST DIGIT OF CLOCK'S FIGURE, AND LETTERS "SLEEP". 1. POWER ON AND INITIAL CLOCK DISPLAY 0:00. 1.25, SAMPLE WAVEFORM Ⓒ. 2. WHEN FIGURE OF FIRST DIGIT CHANGED AS CLOCK TIME ADVANCES, a) FIGURE 0, 6 AND 8 DISPLAYED . . . . . SAMPLE WAVEFORM Ⓒ b) FIGURES 1, 3 AND 7 DISPLAYED . . . . . Ⓔ c) FIGURES 2, 4, 5 AND 9 DISPLAYED . . Ⓐ
47  PT4	DRIVES SEGMENTS b AND c OF SECOND DIGIT OF CLOCK'S FIGURE, AND "PT4". 1. POWER ON AND INITIAL CLOCK DISPLAY 0:00. 1.25, SAMPLE WAVEFORM: Ⓒ. 2. WHEN FIGURE OF SECOND DIGIT CHANGED AS CLOCK TIME ADVANCES, a) FIGURES 0, 1, 3 AND 4 DISPLAYED . . SAMPLE WAVEFORM Ⓒ b) FIGURE 2 AND 5 DISPLAYED . . . . . Ⓐ Note: FIGURES 6 THROUGH 9 ARE NOT DISPLAYED, BECAUSE THESE ARE NOT NECESSARY.
48  PT3	DRIVES SEGMENTS a, d, AND g OF SECOND DIGIT OF CLOCK'S FIGURE. 1. POWER ON AND INITIAL DISPLAY 0:00. 1.25, SAMPLE WAVEFORM: Ⓒ. 2. WHEN FIGURE OF SECOND DIGIT CHANGED AS CLOCK TIME ADVANCES, a) FIGURE 0 DISPLAYED . . . . . . SAMPLE WAVEFORM Ⓒ b) FIGURE 1 DISPLAYED . . . . . . Ⓔ c) FIGURES 2, 3 AND 5 DISPLAYED . . . . . Ⓑ d) FIGURE 4 DISPLAYED . . . . . . Ⓐ Note: FIGURES 6 THROUGH 9 ARE NOT DISPLAYED, BECAUSE THESE ARE NOT NECESSARY.
49  30	DRIVES SEGMENTS e AND f OF SECOND DIGIT OF CLOCK'S FIGURE, AND FIGURES "30". 1. POWER ON AND INITIAL DISPLAY 0:00. 1.25, SAMPLE WAVEFORM: Ⓒ. 2. WHEN FIGURE OF SECOND DIGIT CHANGED AS CLOCK TIME ADVANCES, a) FIGURE 0 DISPLAYED . . . . SAMPLE WAVEFORM Ⓒ b) FIGURES 1 AND 3 DISPLAYED . . . . . . Ⓔ c) FIGURE 2, 4 AND 5 DISPLAYED . . Ⓐ Note: FIGURES 6 THROUGH 9 ARE NOT DISPLAYED, BECAUSE THESE ARE NOT NECESSARY.
50  PT2	DRIVES SEGMENTS b AND c OF THIRD DIGIT OF CLOCK'S FIGURE, AND "PT2". 1. POWER ON AND INITIAL DISPLAY 0:00. 1.25, SAMPLE WAVEFORM: Ⓒ. 2. WHEN FIGURE OF THIRD DIGIT CHANGED AS CLOCK TIME ADVANCES, a) FIGURES 0, 1, 3, 4, 7-9 DISPLAYED . . SAMPLE WAVEFORM Ⓒ b) FIGURES 2, 5 AND 6 DISPLAYED . . Ⓐ

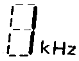
FOR SAMPLE WAVEFORMS, SEE PAGES FROM 53.

IC PIN	
IC501 51 	DRIVES SEGMENTS a, d AND g OF THIRD DIGIT OF CLOCK'S FIGURE. 1. POWER ON AND INITIAL DISPLAY 0:00. 1.25, SAMPLE WAVEFORM: Ⓒ 2. WHEN FIGURE OF THIRD DIGIT CHANGED AS CLOCK TIME ADVANCES, a) FIGURE 0 DISPLAYED .... SAMPLE WAVEFORM Ⓒ b) FIGURE 1 DISPLAYED .... Ⓔ c) FIGURES 2, 3 5, 6, 8 AND 9 DISPLAYED .... Ⓑ d) FIGURES 4 AND 7 DISPLAYED ...... Ⓐ
52  PT1	DRIVES SEGMENTS e AND f OF THIRD DIGIT OF CLOCK'S FIGURE, AND "PT1". 1. POWER ON AND INITIAL DISPLAY 0:00. 1.25, SAMPLE WAVEFORM: Ⓒ. 2. WHEN FIGURE OF THIRD DIGIT CHANGED AS CLOCK TIME ADVANCES, a) FIGURES 0, 6 AND 8 DISPLAYED .... SAMPLE WAVEFORM Ⓒ b) FIGURE 1, 3 AND 7 DISPLAYED . . Ⓔ c) FIGURE 2, 4, 5 AND 9 DISPLAYED . . Ⓐ
53 OR 	DRIVES FOURTH DIGIT OF CLOCK'S FIGURE, I.E., 1 OR 2. 1. POWER ON AND INITIAL CLOCK DISPLAY 0:00. 0.7, SAMPLE WAVEFORM: Ⓔ (FOURTH DIGIT IS VACANT). 2. WHEN FIGURE OF FOURTH DIGIT CHANGED AS CLOCK TIME ADVANCES, SAMPLE WAVEFORM IS Ⓒ FOR BOTH FIGURES 1 AND 2. Note: FIGURES 1 AND 2 ARE EFFECTIVE, AND OTHERS ARE NOT NECESSARY AND NOT DISPLAYED.
54 AM PM	DRIVES LETTERS "AM" AND "PM". 1. WHEN BOTH "AM" AND "PM" ARE NOT DISPLAYED; 0.7, SAMPLE WAVEFORM: Ⓔ 2. WHEN "AM" OR "PM" DISPLAYED: 1.05, SAMPLE WAVEFORM: Ⓐ
55	0 OR 3.0. 1. RECEIVES ALTERNATE 0V ("L") AND +3V ("H") DC SIGNALS FROM ROTARY ENCODER. 0V ("L") OR +3V ("H") STATE DEPENDS UPON STOPPING POSITION OF TUNING KNOB. 2. SAMPLE WAVEFORMS: (AL), (AM) AND (BC) 3. COMMON FOR ALL BANDS.
56	0 (ALL BANDS)
56	1.25 (ALL BANDS/ MODES). MICROCOMPUTER CLOCK SAMPLE WAVEFORM: (AN)
58	2.95 (ALL BANDS/MODES)
59	1.5. SAMPLE WAVEFORM: (AO)
60	3.4. TAKES ABOUT 25 MINUTES TO FULLY DISCHARGE AFTER TURNING BOTH POWER SWITCHES OFF.
61	1. WITH CLOCKWISE TURNING OF TUNING KNOB, ALTERNATE 0 AND 3.0 (ALL BANDS). "L" AND "H" DEPENDS UPON SETTING OF TUNING KNOB. SAMPLE WAVEFORM: (AP) 2. 0 WITH COUNTERCLOCKWISE TURNING OF TUNING KNOB.

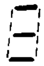
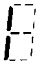
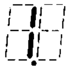
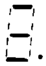
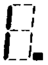
IC PIN	AM	FM	AIR
IC501 62	1. 0 WITHOUT TURNING TUNING KNOB. 2. WHEN TUNING KNOB TURNED, a) 0.15 WITH MANUAL TUNE MODE SWITCH (S501) SET TO FAST OR SLOW. b) 0.35 WITH MANUAL TUNE MODE SWITCH (S501) SET TO LOCK.		
63	0 OR 2.6. 1. POWER ON AND INITIAL STATE: 0 2. 2.6 WHEN PRESENT TIME, SLEEP, LIGHT OR SCAN (BOTH) KEY KEYED IN AND KEPT DEPRESSED. BACKS TO 0 WHEN RELEASED. 3. SAMPLE WAVEFORMS: a) SCAN START/STOP: Ⓢ b) MEMORY SCAN START/STOP: Ⓣ c) LIGHT: Ⓙ d) PRESENT TIME: Ⓡ e) SLEEP: (AI)		
64	2.95 (ALL BANDS) SAMPLE WAVEFORM: Ⓞ		
IC502 1	NOT USED.		
2	0 (ALL BANDS)		
3	0 (ALL BANDS). SAME AS PIN 2 OF IC505.		
4	0 (ALL BANDS). SAME AS PIN 1 OF IC505.		
5	0 (ALL BANDS).		
6	0 (ALL BANDS).		
7	0.4 (ALL BANDS).		
8	0 (ALL BANDS).		
9	1.7 AT THE MOMENT OF POWER ON, AND 0 THEREAFTER (ALL BANDS). 0.4 MOMENTARILY WHEN BAND IS CHANGED.		
10	LW: 0 MW: 3.0 SW: 3.0	0	0
11	LW: 3.0 MW: 0 SW: 3.0	0	0
12	0	0	0
13	0	0	0
14	2.95	2.95	2.95
15	0	2.95	0
16	W, N, SF: 2.95 SN, U, L: 0	0	2.95
17	U, L: 2.95 OTHERS: 0	0	0
18	W, N, SF, U: 2.95 SN, L: 0	0	2.95
19	W, SF, SN: 0 N, U, L: 2.95	0	0
20	NOT USED, BUT 1.0 (ALL BANDS). SAMPLE WAVEFORM: (AK)		
21	1.25 MICROCOMPUTER CLOCK. SAMPLE WAVEFORM: (AJ)		
22, 23	0 (ALL BANDS)		
24	1.2 (ALL BANDS). LCD VOLTAGE.		
25	1.4 (ALL BANDS). LCD VOLTAGE.		
26	2.95 (ALL BANDS).		
27	NOT USED, BUT 1.05 (ALL BANDS) SAMPLE WAVEFORM: Ⓔ		

FOR SAMPLE WAVEFORMS, SEE PAGES FROM 53.

<table>
<tr><th>IC PIN</th><th></th></tr>
<tr><td>IC502 28</td><td>1.25
DRIVES COMMON ELECTRODE FOR DISPLAYS AM, MW 9 kHz, MW 10 kHz, SCAN1, SCAN2, MHz, ETC. SEE PAGE 59.
SAMPLE WAVEFORM: Ⓓ</td></tr>
<tr><td>29</td><td>1.25
DRIVES COMMON ELECTRODE FOR DISPLAYS FM AND 28 OTHER ELEMENTS OR SEGMENTS. SEE PAGE 59.
SAMPLE WAVEFORM: Ⓓ</td></tr>
<tr><td>30</td><td>1.25
SAMPLE WAVEFORM: Ⓓ
DRIVES COMMON ELECTRODES FOR DISPLAYS AIR, WIDE, NARROW, SYNC, USB, LSB/CW, kHz, SCAN AND 16 OTHER ELEMENTS OR SEGMENTS. SEE PAGE 59.</td></tr>
<tr><td>31
 </td><td>0.75. SAMPLE WAVEFORM: Ⓔ.
DRIVES SEGMENTS b AND d OF SCANNING CHANNEL'S FIGURE, AND DISPLAY "SCAN".
1. FIGURES 1, 3, 4, 7 AND 8 DISPLAYED . . . . .SAMPLE WAVEFORM Ⓒ
2. FIGURES 2, 5 AND 6 DISPLAYED . . . . .Ⓐ</td></tr>
<tr><td>32
</td><td>0.75, SAMPLE WAVEFORM: Ⓔ.
DRIVES SEGMENTS a, d AND g OF SCANNING CHANNEL'S FIGURE.</td></tr>
<tr><td>33
</td><td>0.75. SAMPLE WAVEFORM: Ⓔ.
DRIVES SEGMENTS e AND f OF SCANNING CHANNEL'S FIGURE, AND ONE SEGMENT OF SCANNING CHANNEL'S LETTER "a" OR "d".
SAMPLE WAVEFORMS WHEN SCANNING CHANNELS DISPLAYED.
<table>
<tr><th></th><th>1</th><th>2</th><th>3</th><th>4</th><th>5</th><th>6</th><th>7</th><th>8</th></tr>
<tr><td>a</td><td>Ⓐ</td><td>Ⓒ</td><td>Ⓐ</td><td>Ⓒ</td><td>Ⓒ</td><td>Ⓑ</td><td>Ⓐ</td><td>Ⓑ</td></tr>
<tr><td>b</td><td>Ⓔ</td><td>Ⓐ</td><td>Ⓔ</td><td>Ⓐ</td><td>Ⓐ</td><td>Ⓒ</td><td>Ⓔ</td><td>Ⓒ</td></tr>
<tr><td>c</td><td>Ⓔ</td><td>Ⓐ</td><td>Ⓔ</td><td>Ⓐ</td><td>Ⓐ</td><td>Ⓒ</td><td>Ⓔ</td><td>Ⓒ</td></tr>
<tr><td>d</td><td>Ⓔ</td><td>Ⓐ</td><td>Ⓔ</td><td>Ⓐ</td><td>Ⓐ</td><td>Ⓒ</td><td>Ⓔ</td><td>Ⓒ</td></tr>
</table></td></tr>
<tr><td>34
</td><td>0.7V, SAMPLE WAVEFORM: Ⓔ.
DRIVES TWO SEGMENTS OF "a", THREE SEGMENTS OF "d" AND HYPHEN IN SCANNING CHANNEL'S DISPLAY.
1. MEMORY/SCANNING CHANNELS OF ROWS a AND b DISPLAYED; SAMPLE WAVEFORM: Ⓒ
2. MEMORY/SCANNING CHANNELS OF ROW c DISPLAYED; SAMPLE WAVEFORM: Ⓐ
3. MEMORY/SCANNING CHANNELS OF ROW d DISPLAYED; SAMPLE WAVEFORM: Ⓑ</td></tr>
<tr><td>35
</td><td>1.05, SAMPLE WAVEFORM: Ⓐ.
DRIVES ONE SEGMENT OF LETTER "b" AND TRIANGULAR MARK IN MEMORY/SCANNING CHANNEL'S DISPLAY.
1. MEMORY/SCANNING CHANNELS OF ROWS a, c AND d DISPLAYED; SAMPLE WAVEFORM: Ⓒ.
2. MEMORY/SCANNING CHANNELS OF ROW b DISPLAYED; SAMPLE WAVEFORM: Ⓑ.</td></tr>
</table>

<table>
<tr><th>IC PIN</th><th>AM</th><th>FM</th><th>AIR</th></tr>
<tr><td rowspan="2">IC502 36
 </td><td colspan="3">DRIVES SEGMENTS b AND c OF FIRST DIGIT OF FREQUENCY DISPLAY, AND "kHz".</td></tr>
<tr><td>1. INITIAL SAMPLE WAVEFORM: Ⓑ
2. SAMPLE WAVEFORM Ⓐ FOR 5 SECONDS AFTER KEYED FREQUENCY IN FROM TEN KEYS AND NOT EXECUTED, AND BACKS TO INITIAL STATE.
3. WHEN EXECUTED AND FREQUENCY CHANGED,
a) FIGURES 0,1,3,4,7,8 AND 9 DISPLAYED; SAMPLE WAVEFORM: Ⓑ
b) FIGURES 2, 5 AND 6 DISPLAYED; SAMPLE WAVEFORM: Ⓒ</td><td colspan="2">1. INITIAL SAMPLE WAVEFORM: Ⓒ
2. SAMPLE WAVEFORM E FOR 5 SECONDS AFTER KEYED FREQUENCY IN FROM TEN KEYS AND NOT EXECUTED, AND BACKS TO INITIAL STATE.
3. WHEN EXECUTED AND FREQUENCY IS CHANGED,
a) .000 MHz AND .050 MHz DISPLAYED; SAMPLE WAVEFORM: Ⓒ
b) .025MHz AND .075 MHz DISPLAYED; SAMPLE WAVEFORM: Ⓐ
Note: FM BAND IS OF .050 MHz AND AIR BAND IS OF .025MHz CHANNEL STEP, SO FIRST DIGIT IS 0 OR 5.</td></tr>
</table>

FOR SAMPLE WAVEFORMS, SEE PAGES FROM 53.

IC	PIN	AM	FM	AIR
IC502	37 	1.25. INITIAL SAMPLE WAVEFORM: Ⓒ (FIRST FREQUENCY DIGIT IS 0) DRIVES SEGMENTS a, d AND g OF FIRST DIGIT OF FREQUENCY DISPLAY. 1. SAMPLE WAVEFORM Ⓔ FOR 5 SECONDS AFTER KEYED FREQUENCY IN FROM TEN KEYS AND NOT EXECUTED, AND BACKS TO INITIAL STATE.		
		2. WHEN EXECUTED AND FREQUENCY CHANGED, a) FIGURES 0 DISPLAYED; SAMPLE WAVEFORM: Ⓒ b) FIGURE 1 DISPLAYED; SAMPLE WAVEFORM: Ⓔ c) FIGURES 2,3,5,6,8 AND 9 DISPLAYED; SAMPLE WAVEFORM: Ⓑ d) FIGURES 4 AND 7 DISPLAYED; SAMPLE WAVEFORM: Ⓐ	2. DISPLAY IS ALWAYS 0 AND SAMPLE WAVEFORM IS ALWAYS Ⓒ.	2. WHEN EXECUTED AND FREQUENCY CHANGED, a) .000MHz, .050MHz AND .100 MHz DISPLAYED; SAMPLE WAVEFORM: Ⓒ b) .025MHz AND .075 MHz DISPLAYED; SAMPLE WAVEFORM: Ⓑ
	38  SCAN2	1.4. INITIAL SAMPLE WAVEFORM: Ⓑ (FIRST FREQUENCY DIGIT IS 0) DRIVES SEGMENTS e AND f OF FIRST DIGIT OF FREQUENCY DISPLAY AND "SCAN2".		
		WHEN FREQUENCY IS EXECUTED AND CHANGED AND, a) FIGURES 0, 6 AND 8 DISPLAYED; SAMPLE WAVEFORM: Ⓑ b) FIGURES 1, 3 AND 7 DISPLAYED; WAVEFORM: Ⓐ c) FIGURES 2,4,5 AND 9 DISPLAYED; SAMPLE WAVEFORM: Ⓒ	SAMPLE WAVEFORM: ALWAYS Ⓑ (FIGURE DISPLAYED IS ALWAYS 0)	WHEN FREQUENCY IS EXECUTED AND CHANGED AND, a) FIGURE 0 DISPLAYED; SAMPLE WAVEFORM: Ⓑ b) FIGURE 5 DISPLAYED: SAMPLE WAVEFORM: Ⓒ
IC502	39 LSB/CW 	DRIVES SEGMENTS b AND c OF SECOND DIGIT OF FREQUENCY DISPLAY, AND "LSB/CW" DISPLAY.		
		WHEN FREQUENCY IS EXECUTED AND FIGURE OF SECOND DIGIT IS CHANGED AND, a) FIGURES 0,1,3,4,7,8 AND 9 DISPLAYED; SAMPLE WAVEFORM: Ⓒ b) FIGURES 2, 5 AND 6 DISPLAYED; SAMPLE WAVEFORM: Ⓐ	WHEN FREQUENCY IS EXECUTED AND FIGURE OF SECOND DIGIT IS CHANGED AND, a) FIGURE 0 DISPLAYED; SAMPLE WAVEFORM: Ⓒ b) FIGURE 5 DISPLAYED; SAMPLE WAVEFORM: Ⓐ	WHEN FREQUENCY IS EXECUTED AND FIGURE OF SECOND DIGIT IS CHANGED AND, a) FIGURES 0 AND 7 DISPLAYED; SAMPLE WAVEFORM: Ⓒ b) FIGURES 2 AND 5 DISPLAYED; SAMPLE WAVEFORM: Ⓐ
	40 	DRIVES SEGMENTS a, d AND g OF SECOND DIGIT OF FREQUENCY DISPLAY. WHEN FREQUENCY IS EXECUTED AND FIGURE OF SECOND DIGIT IS CHANGED AND, a) FIGURE 0 DISPLAYED; SAMPLE WAVEFORM: Ⓒ. b) FIGURE 1 DISPLAYED; SAMPLE WAVEFORM: Ⓔ. c) FIGURES 2, 3, 5, 6, 8 AND 9 DISPLAYED; SAMPLE WAVEFORM: Ⓑ. d) FIGURES 4 AND 7 DISPLAYED; SAMPLE WAVEFORM: Ⓐ		
	41 	DRIVES SEGMENTS e AND f OF SECOND DIGIT OF FREQUENCY DISPLAY, AND "DOT".		
		WHEN FREQUENCY IS EXECUTED AND FIGURE OF SECOND DIGIT CHANGED AND, a) FIGURES 0,6 AND 8 DISPLAYED; SAMPLE WAVEFORM: Ⓑ b) FIGURES 1, 3 AND 7 DISPLAYED; SAMPLE WAVEFORM: Ⓐ c) FIGURES 2,4,5 AND 9 DISPLAYED; SAMPLE WAVEFORM: Ⓒ	WHEN FREQUENCY IS EXECUTED AND FIGURE OF SECOND DIGIT CHANGED AND, a) FIGURE 0 DISPLAYED; SAMPLE WAVEFORM: Ⓒ b) FIGURE 5 DISPLAYED; SAMPLE WAVEFORM: Ⓐ.	c) FIGURE 2 DISPLAYED; SAMPLE WAVEFORM: Ⓐ d) FIGURE 7 DISPLAYED; SAMPLE WAVEFORM: Ⓔ

FOR SAMPLE WAVEFORMS, SEE PAGES FROM 53.

IC	PIN	AM	FM	AIR
IC502	42 USB 	DRIVES SEGMENTS b AND c OF THIRD DIGIT OF FREQUENCY DISPLAY, AND "USB". WHEN FREQUENCY IS EXECUTED AND FIGURE OF THIRD DIGIT CHANGED AND, a) FIGURES 0, 1, 3, 4, 7, 8 AND 9 DISPLAYED; SAMPLE WAVEFORM: Ⓒ b) FIGURES 2, 5 AND 6 DISPLAYED; SAMPLE WAVEFORM: Ⓐ SAME AS THOSE AT PIN 50 OF IC501, AND THOSE AT PIN 39 OF IC502 IN "AM" BAND SHOWN ABOVE.		
	43 	DRIVES SEGMENTS a, d AND g OF THIRD DIGIT OF FREQUENCY DISPLAY. WHEN FREQUENCY IS EXECUTED AND FIGURE OF THIRD DIGIT CHANGED, SAMPLE WAVEFORMS ARE SAME AS PIN 40 OF IC502 IN "AM" BAND SHOWN ABOVE.		
	44 SCAN1	DRIVES SEGMENTS e AND f OF THIRD DIGIT OF FREQUENCY DISPLAY, AND "SCAN 1". WHEN FREQUENCY IS EXECUTED AND FIGURE OF THIRD DIGIT CHANGED, SAMPLE WAVEFORMS ARE SAME AS THOSE AT PIN 46 OF IC501 SHOWN ABOVE.		
	45 SYNC 	DRIVES SEGMENTS b AND c OF FOURTH DIGIT OF FREQUENCY DISPLAY, AND "SYNC". WHEN FREQUENCY IS EXECUTED AND FIGURE OF FOURTH DIGIT CHANGED, SAMPLE WAVEFORMS ARE SAME AS THOSE AT PIN 42 OF IC502 SHOWN ABOVE.		
	46 	DRIVES SEGMENTS a, d AND g OF FOURTH DIGIT OF FREQUENCY DISPLAY. WHEN FREQUENCY IS EXECUTED AND FIGURE OF FOURTH DIGIT CHANGED, SAMPLE WAVEFORMS ARE SAME AS THOSE AT PIN 40 OF IC502 IN "AM" MODE SHOWN ABOVE.		
	47 MHz	DRIVES SEGMENTS e AND f OF FOURTH DIGIT AND 1MHz DOT OF FREQUENCY DISPLAY, AND "MHz". WHEN FREQUENCY IS EXECUTED AND FIGURE OF FOURTH DIGIT CHANGED, SAMPLE WAVEFORMS ARE SAME AS THOSE AT PIN 46 OF IC501 SHOWN ABOVE.	SAMPLE WAVEFORMS ARE SAME AS THOSE AT PIN 38 OF IC502 IN "AM" BAND SHOWN ABOVE.	
	48 NARROW 	DRIVE SEGMENTS b AND c OF FIFTH DIGIT OF FREQUENCY DISPLAY, AND "NARROW". AT INITIAL 150kHz, SAMPLE WAVEFORM Ⓔ AT OFF-BAND WITH Error DISPLAY, ALSO Ⓔ	1. AT INITIAL 76MHz OR 116MHz, SAMPLE WAVEFORM Ⓒ. 2. AT OFF-BANDS WITH Error DISPLAY, BLINKED WAVEFORMS Ⓐ AND Ⓔ FOR FIVE SECONDS.	
	49 	DRIVES SEGMENTS a, d AND g OF FIFTH DIGIT OF FREQUENCY DISPLAY. WHEN FREQUENCY IS EXECUTED AND FIFTH DIGIT OF FREQUENCY CHANGED, SAMPLE WAVEFORMS ARE THOSE AT PIN 40 OF IC502 IN "AM" MODE SHOWN ABOVE. NOTE: a) FIGURES FOR FM BAND ARE 7, 8, 9 AND 0 ONLY. b) FIGURES FOR AIR BAND ARE 1, 2 AND 3 ONLY.		
IC502	50 MW10kHz	DRIVES SEGMENTS e AND f OF FIFTH DIGIT OF FREQUENCY DISPLAY, AND "MW10kHz" DISPLAY. WHEN FREQUENCY IS EXECUTED AND FIFTH DIGIT OF FREQUENCY CHANGED, SAMPLE WAVEFORMS ARE THOSE AT PIN 46 OF IC501 IN OR THOSE AT PIN 47 OF IC502 IN "AM" BAND. NOTE: a) FIGURES FOR FM BAND ARE 7, 8, 9 AND 0 ONLY. b) FIGURES FOR AIR BAND ARE 1, 2 AND 3 ONLY.		
	51 	DRIVES SEGMENTS a, b, c, d, e AND g OF SIXTH DIGIT OF FREQUENCY DISPLAY. WHEN FREQUENCY IS EXECUTED AND SIXTH DIGIT OF FREQUENCY CHANGED, a) VACANT (NO DISPLAY); SAMPLE WAVEFORM: Ⓔ b) FIGURES 1 AND 2 DISPLAYED; SAMPLE WAVEFORM: Ⓒ c) WHEN OFF-BAND FREQUENCY EXECUTED AT LOWER END, Error DISPLAY BLINKS FOR FIVE SECONDS, AND BACKS TO INITIAL FREQUENCY; SAMPLE WAVEFORMS: ALTERNATE Ⓐ AND Ⓔ DURING BLINKING.	a) VACANT (NO DISPLAY); SAMPLE WAVEFORM: Ⓔ b) FIGURE 1 DISPLAYED; SAMPLE WAVEFORM: Ⓒ c) WHEN OFF-BAND FREQUENCIES EXECUTED TO UPPER END, Error DISPLAY BLINKS FOR FIVE SECONDS, AND BACKS TO INITIAL FREQUENCY; SAMPLE WAVEFORMS: ALTERNATE Ⓐ AND Ⓒ DURING BLINKING. d) LOWER-END OFF-BAND; ALTERNATE Ⓐ AND Ⓔ DURING BLINKING.	a) FIGURE 1 ONLY AND SAMPLE WAVEFORM IS Ⓒ. b) WHEN OFF-BAND FREQUENCIES EXECUTED AT BOTH ENDS, Error DISPLAY BLINKS FOR FIVE SECONDS, AND BACKS TO INITIAL FREQUENCY; SAMPLE WAVEFORMS: ALTERNATE Ⓐ AND Ⓒ DURING BLINKING.
	52 WIDE MW9kHz	DRIVES SEGMENT f (NOT USED IN THIS SET) OF SIXTH FREQUENCY DISPLAY, AND "WIDE" AND "MW9kHz" DISPLAYS. IN WIDE AND MW9kHz MODE, SAMPLE WAVEFORM Ⓒ.	SAMPLE WAVEFORM IS ALWAYS Ⓐ.	
	53 AIR FM AM	1.05. DRIVES SEGMENT "AM", "FM" OR "AIR". SAMPLE WAVEFORM: Ⓐ		

FOR SAMPLE WAVEFORMS, SEE PAGES FROM 53.

IC	PIN	AM	FM	AIR
IC502	54	0.7. SAMPLE WAVEFORM: (E) DRIVES TRIANGLE MARKS.		
	55	0 (GROUND) (ALL BANDS)		
	56	0 (ALL BANDS)		
	57	1.2. (ALL BANDS). CLOCK SAMPLE WAVEFORM: (F)		
	58	2.95 (B+, ALL BANDS).		
	59	1.3 (ALL BANDS). CLOCK SAMPLE WAVEFORM: (G)		
	60	0 OR 3.0. ACTIVATES "FAST" TUNING OF AM MANUAL TUNE MODE. 0: "LOCK" AND "SLOW" POSITIONS. 3.0: "FAST" POSITION.		
	61	0 OR 3.0. ACTIVATES "SLOW" TUNING OF MANUAL TUNE MODE. 0: "LOCK" AND "FAST" POSITIONS. 3.0: "SLOW" POSITION.		
	62	0 (ALL BANDS)		
	63	0 OR 2.75. SAME AS PIN 10 OF IC501.		
	64	0 OR 0.15 OR 0.35. SAME AS PIN 62 OF IC501.		
IC503	1	0. (2.6 WHEN b1-b8 KEYED IN AND KEPT DEPRESSED. 0 WHEN OTHER KEYS KEYED IN.)		
	2	0. (2.6 WHEN c1-c8 KEYED IN AND KEPT DEPRESSED. 0 WHEN OTHER KEYS KEYED IN.)		
	3	0 (2.6 WHEN d1–d8 KEYED IN AND KEPT DEPRESSED. 0 WHEN OTHER KEYS KEYED IN.)		
	4	0 (2.6 WHEN AIR, FM OR AM KEYED IN.)		
	5	3.0 (B+).		
	6	0. (2.95 WHEN b1–b8, c1–c8, d1–d8, WIDE, NARROW, SYNC, USB OR LSB/CW KEYED IN.) IDENTICAL TO PIN 13 OF IC501 (ICF-2010).		
	7	0. (2.95 WHEN THOSE KEYS SHOWN FOR PIN 14 OF. IC501 ARE KEYED IN. IDENTICAL TO PIN 14 OF IC501).		
	8	0 (GROUND).		
	9	0. (2.95 WHEN THOSE KEYS SHOWN FOR PIN 15 OF IC501 ARE KEYED IN. IDENTICAL TO PIN 15 OF IC501).		
	10	0 (GROUND).		
	11	0. (2.6 WHEN KEYS 0–7 ARE KEYED IN OR KEPT DEPRESSED AT TEN KEY, AND BACKS TO 0 WHEN KEY IS RELEASED.) SAMPLE WAVEFORMS WHEN FIGURES ARE KEYED IN; 0: (W) 3: (Z) 6: (AC) 1: (X) 4: (AA) 7: (AD) 2: (Y) 5: (AB)		
	12	0. (2.6 WHEN 8, 9, EXECUTE, 0 MIN, 15 MIN, 30 MIN OR 60 MIN ARE KEYED IN OR KEPT DEPRESSED, AND BACKS TO 0 WHEN KEY IS RELEASED.) SAMPLE WAVEFORMS WHEN KEYED IN; 8: (W) 15 MIN: (AA) 9: (X) 30 MIN: (AB) EXECUTE: (Y) 60 MIN: (AC) 0 MIN: (Z)		
IC503	13	0. (2.6 WHEN a1–a8 KEYED IN OR KEPT DEPRESSED, AND BACKS TO 0 WHEN KEY IS RELEASED.) SAMPLE WAVEFORMS WHEN KEYED IN; a1: (W) a4: (Z) a7: (AC) a2: (X) a5: (AA) a8: (AD) a3: (Y) a6: (AB)		
	14	NOT USED, BUT 0. (2.95 WHEN KEYS OTHER THAN LIGHT, SLEEP, PT1–PT4, SCAN START/STOP, MEMORY SCAN START/STOP, SKIP, ENTER AND SHIFT ARE KEYED IN OR KEPT DEPRESSED, AND BACKS TO 0 WHEN KEY IS RELEASED.) SAMPLE WAVEFORMS ARE ALSO IN THE ORDER OF (W) TO (AD) AS SHOWN ABOVE IN 8-BIT SYSTEM.		
	15	NOT USED, BUT 2.95. (0 REVERSEWISE WHEN AIR, FM, AM, WIDE, NARROW, SYNC, USB AND LSB/CW ARE KEYED IN.) SAMPLE WAVEFORMS WHEN KEYED IN. AIR: (AQ) WIDE: (AT) USB: (AW) FM: (AR) NARROW: (AU) LSB/CW: (AX) AM: (AS) SYNC: (AV) OTHER KEYS ARE UNCHANGED WHEN KEYED IN, I.E., 2.95.		
	16	3.0 (B+).		
IC504	1	0 OR 3.0 DEPENDING UPON STOP POSITION OF TUNING KNOB. 1. ALTERNATE 0 AND 3.0 WHEN TUNING KNOB TURNED COUNTERCLOCKWISE. FREQUENCY DISPLAY'S FIGURE CHANGES AT LEADING EDGE FROM 0V TO 3.0V. SAMPLE WAVEFORM: (AP) 2. UNCHANGED 0V WHEN TUNING KNOB TURNED CLOCKWISE.		
	2	NOT USED.		
	3	0. (ALTERNATE 0 AND 3.0 FOLLOWING TURN OF TUNING KNOB IN BOTH CLOCKWISE AND COUNTERCLOCKWISE.)		
	4	ALTERNATE 0 AND 3.0 FOLLOWING TURN OF TUNING KNOB IN BOTH CLOCKWISE AND COUNTERCLOCKWISE. FREQUENCY DISPLAY FIGURE CHANGES AT LEADING EDGE FROM 0V TO 3.0V.		
	5	ALTERNATE 0 AND 3.0 FOLLOWING TURN OF TUNING KNOB. 1. 0 WHEN PIN 1 OF THIS IC IC504 IS 3.0 "H", AND 3.0 WHEN PIN 1 OF IC504 IS 0. (REVERSAL OF PIN 1 OF IC507) 2. POINTS CAN BE DETECTED WHEN BOTH PINS 1 OF IC507 AND 5 OF IC504 BECOMES IN 0 "L" OR 3.0 "H" AT THE SAME TIME DURING TURN OF TUNING KNOB.		
	6	0 (GROUND).		
	7	0 (GROUND).		
	8	0 (GROUND).		
	9	SAME AS PIN 3 OF THIS IC IC504 AND PIN 1 OF IC507.		

FOR SAMPLE WAVEFORMS, SEE PAGES FROM 53.

IC	PIN	AM	FM	AIR
IC504	10	0. (ALTERNATE 0 AND 3.0 WHEN TUNING KNOB TURNED IN BOTH DIRECTION OF CLOCKWISE AND COUNTERCLOCKWISE. REVERSAL OF PIN 11 OF IC505.) SAMPLE WAVEFORM: (BC)		
	11	SAME AS PIN 5 OF THIS IC IC504 AND PIN 2 OF IC507.		
	12	NOT USED		
	13	SAME AS PIN 61 OF IC501.		
	14	3.0 (B+).		
IC505	1	0 OR 3.0 DEPENDING UPON STOP POSITION OF TUNING KNOB. (ALTERNATE 0 AND 3.0 WHEN TUNING KNOB IS TURNED. SAME AS PIN 4 OF IC502. REVERSAL OF PIN 2 OF IC505.) SAMPLE WAVEFORM: (BF)		
	2	3.0 OR 0 DEPENDING UPON STOP POSITION OF TUNING KNOB. (ALTERNATE 3.0 AND 0 WHEN TUNING KNOB IS TURNED. REVERSAL OF PIN 1 OF IC505. SAME AS PIN 3 OF IC502.) SAMPLE WAVEFORMS: (BD) AND (BE)		
	3	3.0 OR 0 DEPENDING UPON STOP POSITION OF TUNING KNOB. (ALTERNATE 3.0 AND 0 WHEN TUNING KNOB TURNED IN BOTH CLOCKWISE AND COUNTERCLOCKWISE DIRECTIONS. REVERSAL OF PIN 1 OF THIS IC IC505. FIGURE OF FREQUENCY DISPLAY CHANGES AT TRAILING EDGE FROM 3.0 "H" TO 0 ("L"). SAMPLE WAVEFORMS: (BE), (BF) AND (BG)		
	4	3.0 OR 0 DEPENDING UPON STOP POSITION OF TUNING KNOB. (ALTERNATE 3.0 AND 0 WHEN TUNING KNOB TURNED IN BOTH CLOCKWISE AND COUNTERCLOCKWISE DIRECTIONS. "H" OR "L" WHEN PIN 5 OF IC505 IS "H", AND "L" WHEN PIN 5 OF IC505 IS "L".		
	5	0 OR 3.0 DEPENDING UPON STOP POSITION OF TUNING KNOB AND STATES OF INPUT PINS 1 AND 2 OF IC507.		

IC507		IC505
PIN 1	PIN 2	PIN 5
0V("L")	0V("L")	3V("H")
3V("H")	3V("H")	0V("L")
3V("H")	0V("L")	0V("L")
0V("L")	3V("L")	0V("L")

SAMPLE WAVEFORM: (BA)

IC	PIN	AM	FM	AIR
IC505	6,8	SAME AS PIN 61 OF IC501 SHOWN ABOVE. SAMPLE WAVEFORM: (AP)		
	7	0 (GROUND).		
	9	SAME AS PIN 1 OF IC504 SHOWN ABOVE.		
	10	SAME AS PIN 55 OF IC501. REVERSAL OF PIN 11 OF IC505. SAMPLE WAVEFORM: (BC)		
	11	0. (ALTERNATE 0 AND 3.0 WHEN TUNING KNOB TURNED. REVERSAL OF PIN 10 OF THIS IC IC505 AND PIN 55 OF IC501. SAMPLE WAVEFORM: (BC)		
	12	SAME AS PIN 1 OF IC504 AND PIN 9 OF IC505.		
	13	SAME AS PIN 5 OF THIS IC IC505 AND PIN 3 OF IC507.		
	14	3.0 (B+).		

IC	PIN	AM	FM	AIR
IC506	1	SAME AS PIN 4 OF IC502 AND PIN 1 OF IC505.		
	2	0. SAME AS PIN 5 OF IC506 AND PIN 4 OF IC507.		
	3	0. SAME AS PIN 3 OF IC11. SAMPLE WAVEFORM: (BH)		
	4	0. SAME AS PIN 1 OF IC11. WHEN AM, FM, AIR KEYED IN; SAMPLE WAVEFORMS: (BH) AND (BI)		
	5	SAME AS PIN 2 OF THIS IC IC506 AND PIN 4 OF IC507.		
	6	SAME AS PIN 3 OF IC502, PIN 2 OF IC505 AND PIN 8 OF THIS IC506.		
	7	0 (GROUND).		
	8	SAME AS PIN 3 OF IC502, PIN 2 OF IC505 AND PIN 6 OF THIS IC506.		
	9	SAME AS PIN 2 OF IC502 AND PIN 12 OF THIS IC506.		
	10.	0. (1. WHEN AM OR AIR KEYED IN; SAMPLE WAVEFORM: (BJ) 2. WHEN FM KEYED IN: ALWAYS 0V 3. SAME FOR PIN 3 OF IC6.)		
	11	0. (WHEN AIR, FM, AM AND a1–a8 KEYED IN; SAMPLE WAVEFORM: (BJ)) SAME FOR PIN 3 OF IC4.		
	12	0. SAME FOR PIN 2 OF IC502. (WHEN AIR, FM, AM AND a1–a8 KEYED IN; SAMPLE WAVEFORM: (BJ)		
	13	SAME AS PIN 4 OF IC502 AND PIN 1 OF THIS IC506.		
	14	3.0 (B+).		

AM MODE: W: WIDE ON, N: NARROW ON, SF: SYNC OFF, SN: SYNC ON, U: USB ON, L: LSB/CW ON

IC	PIN	AM	FM	AIR
IC507	1	0 OR 3.0 DEPENDING UPON STOP POSITION OF TUNING KNOB. SAME AS PINS 3 AND 9 OF IC504. REVERSAL OF PIN 2 OF THIS IC507.		
	2	3.0 OR 0 DEPENDING UPON STOP POSITION OF TUNING KNOB. SAME AS PINS 5 AND 11 OF IC504. REVERSAL OF PIN 1 OF THIS IC507.		
	3	SAME AS PINS 5 AND 13 OF IC505.		
	4	0. (ALL MODES). SAME AS PINS 2 AND 5 OF IC506.		
	5	0. (GROUND).		
	6	0.4 (ALL BANDS). SAME AS PINS 2 AND 5 OF IC506.		
	7	0. (GROUND).		
	8	0. (ALL BANDS). SAME AS PIN 5 OF IC501 AND PIN 6 OF IC502.		
	9	0. (GROUND).		
	10, 12	0. (ALL BANDS). 1. WHEN BANDS, AM MODES, MEMORY AND TEN KEYS ARE KEYED IN, "L" STATE CHANGES TO "H" (3.0). 2. IC507		

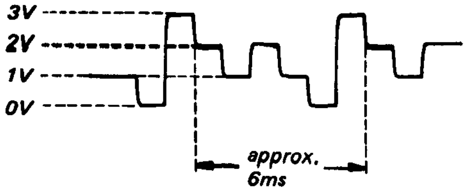
PIN 1	PIN 2	PIN 10 AND 12
3.0("H")	0 ("L")	3.0("H") OR 0 ("L"))
0 ("L")	3.0("H")	3.0("H")
0 ("L")	0 ("L")	3.0("H")
3.0("H")	3.0("H")	3.0("H")

IC	PIN	AM	FM	AIR
IC507	11	0. (DATA SIGNAL FOR PLL'S).		
	13	SAME AS COLLECTOR OF Q504.		
	14.	3.0 (B+).		
IC601	1	2.3	2.3	2.3
	2	0.1	0.1	0.1
	3	SN,U,L: 1.8 W,N,SF: 0	1.8	0
	4	SN: 2.9 SF,U,L: 0	0.1	2.9
	5	NOT USED.	NOT USED.	NOT USED.
	6	0(GROUND)	0(GROUND)	0(GROUND)
	7	2.15	2.15	2.15
	8	2.35	2.35	2.35
	9	0(GROUND)	0(GROUND)	0(GROUND)
	10	NOT USED.	NOT USED.	NOT USED.
	11	2.85	2.85	2.85
	12	NOT USED.	NOT USED.	NOT USED.
	13	W,N: 1.2 U,L: 0.5 SN : 0.7	0.65	1.2
	14	2.95	2.95	2.95
	15	NOT USED.	NOT USED.	NOT USED.
	16	NOT USED.	NOT USED.	NOT USED.
	17	NOT USED.	NOT USED.	NOT USED.
	18	2.65	2.65	2.65
	19	2.95	2.95	2.95
	20	2.45	2.45	2.45

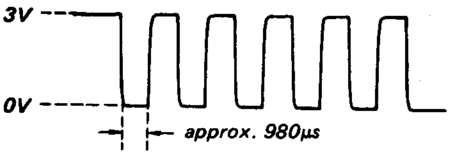
OTHER POINTS		AM	FM	AIR
VCO OUTPUT OF X601 (TO IC10)		SN,U,L; 3Vp-p SIGNAL OF 3.64MHz	3Vp-p SIGNAL OF 3.64MHz	1.3Vp-p SIGNAL OF 3.64MHz
PSN	1	1.0	1.0	1.0
	2	1.0	1.0	1.0
	3	3.0	3.0	3.0
	4	1.35	1.35	1.35
	5	0.45	0.45	0.45
	6	0(GROUND)	0(GROUND)	0(GROUND)
	7	0(GROUND)	0(GROUND)	0(GROUND)
	8	3.0	3.0	3.0
	9	1.0	1.0	1.0
OUTPUT OF L19 TO IC5		AT 150kHz: 70mVp-p SINE OF 50,370.67kHz. AT29,999.9kHz 70mVp-p SINE OF 50,345.57kHz	0	AT 116MHz: 55mVp-p SINE OF 46,605.66kHz AT 136MHz: 60mVp-p SINE OF 46,605.66kHz
OUTPUT OF X3 TO Q5		250mVp-p SINE OF 55,390kHz. SAME FOR "S" OF Q5.	0 SAME FOR "S" OF Q5.	250mVp-p SINE OF 55,390kHz. SAME FOR "S" OF Q5.

SAMPLE WAVEFORMS:

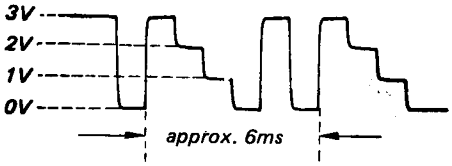
Ⓐ *1.05V DC*


3V
2V
1V
0V
approx. 6ms

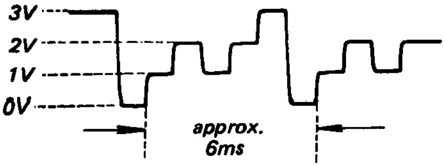
Ⓑ *1.4V DC*


3V
0V
approx. 980µs

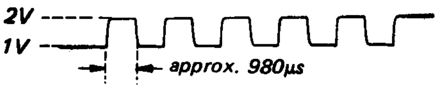
Ⓒ *1.25V DC*


3V
2V
1V
0V
approx. 6ms

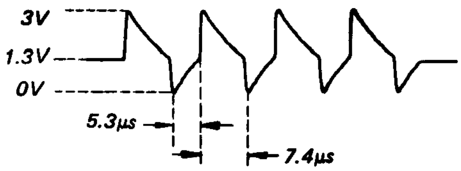
Ⓓ *1.05V DC*


3V
2V
1V
0V
approx. 6ms

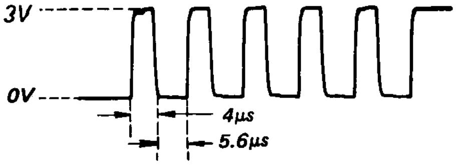
Ⓔ *0.7V DC*


2V
1V
approx. 980µs

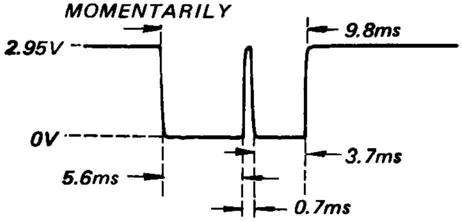
Ⓕ *1.2V DC*
ALL BANDS/AM MODES


3V
1.3V
0V
5.3µs
7.4µs

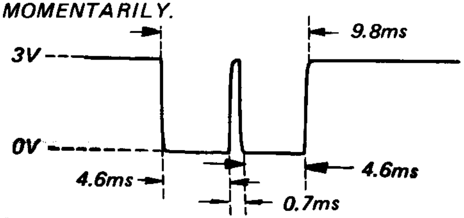
Ⓖ *1.3V DC*
ALL BANDS/AM MODES


3V
0V
4µs
5.6µs

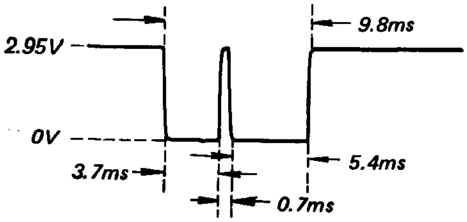
Ⓗ *2.95V DC*
WHEN ANY KEY IS KEYED IN, MOMENTARILY


9.8ms
2.95V
0V
3.7ms
5.6ms
0.7ms

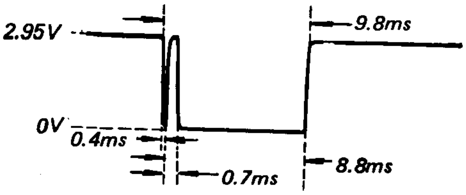
Ⓘ *2.9V DC*
WHEN ANY BAND SWITCH IS KEYED IN, MOMENTARILY.


9.8ms
3V
0V
4.6ms
4.6ms
0.7ms

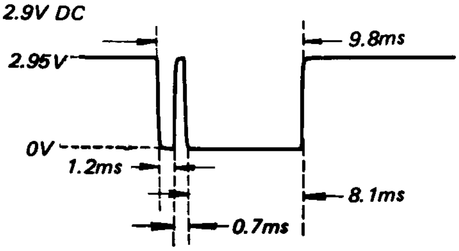
Ⓙ *2.95V DC*


9.8ms
2.95V
0V
5.4ms
3.7ms
0.7ms

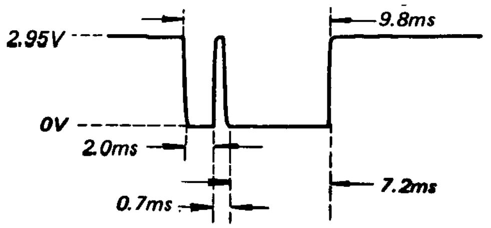
Ⓚ *2.9V DC*


9.8ms
2.95V
0V
0.4ms
0.7ms
8.8ms

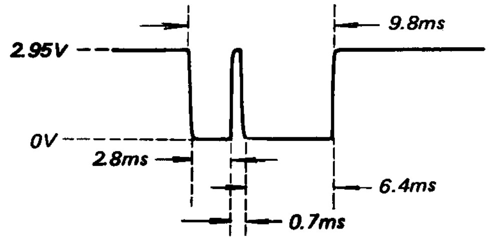
Ⓛ *2.9V DC*


9.8ms
2.95V
0V
1.2ms
8.1ms
0.7ms

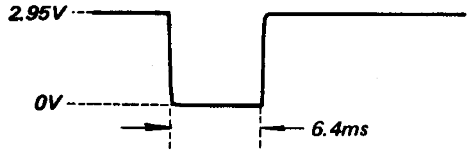
Ⓜ 2.95V DC
WHEN BAND IS SWITCHED, MOMENTARILY



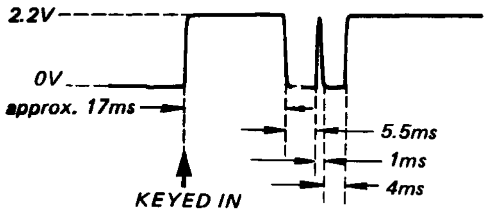
Ⓝ 2.95V DC
WHEN BAND IS SWITCHED, MOMENTARILY



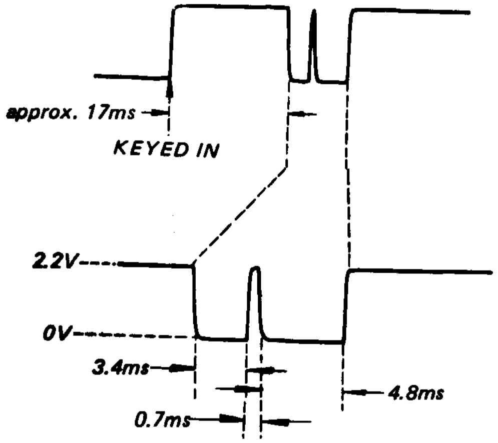
Ⓞ 2.95V DC
WHEN BAND IS SWITCHED, MOMENTARILY



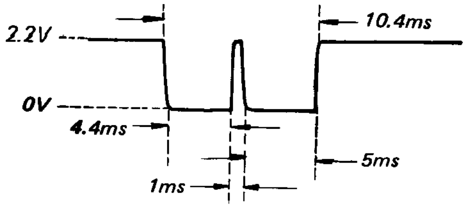
Ⓟ 2.2V DC
WHEN ENTER SWITCH KEYED IN



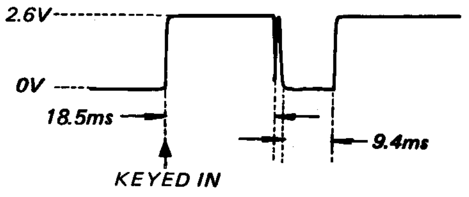
Ⓠ 2.2V DC
WHEN SHIFT SWITCH KEYED IN



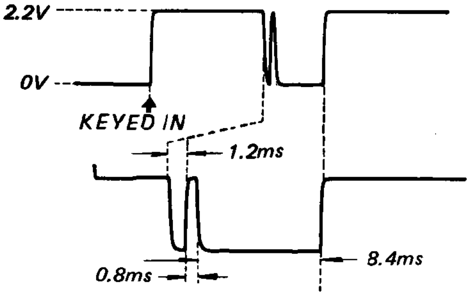
Ⓡ 2.2V DC



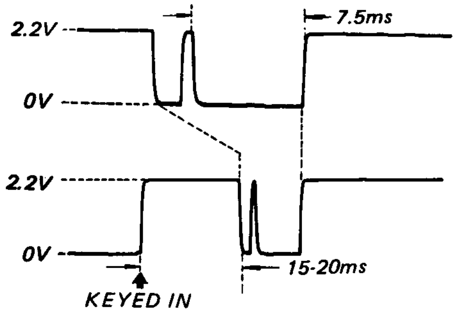
Ⓢ PT1 SWITCH OFF: 0V DC
PT1 SWITCH KEPT DEPRESSED: 2.2V DC



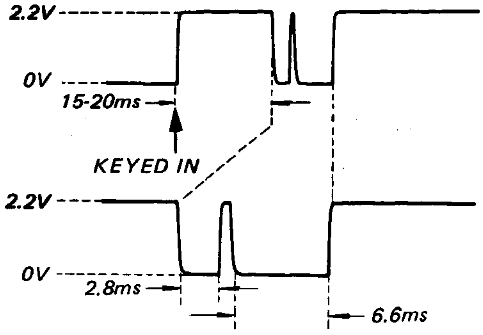
Ⓣ 2.2V DC



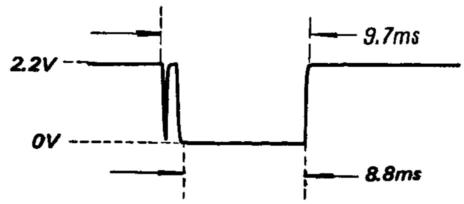
Ⓤ 2.2V DC



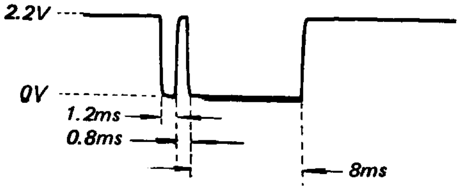
Ⓥ 2.2V DC



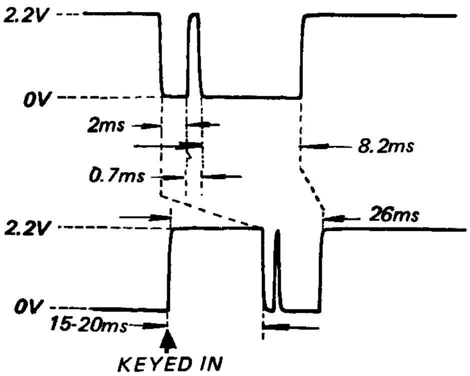
Ⓦ 2.2V DC



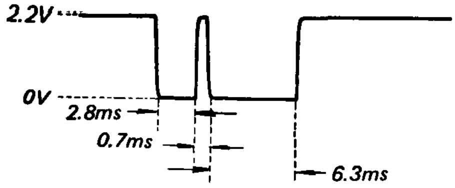
Ⓧ 2.2V DC



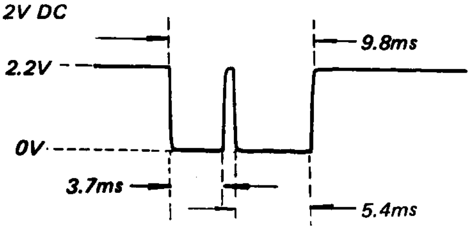
Ⓨ 2.2V DC



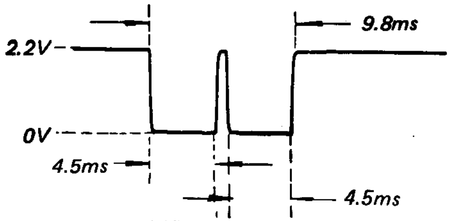
Ⓩ 2.2V DC



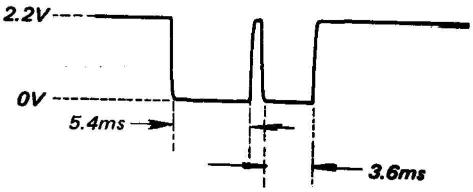
(AA) 2.2V DC



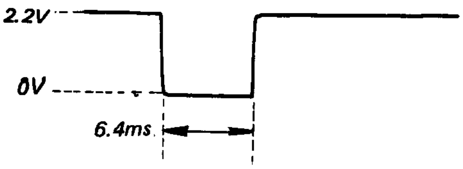
(AB) 2.2V DC



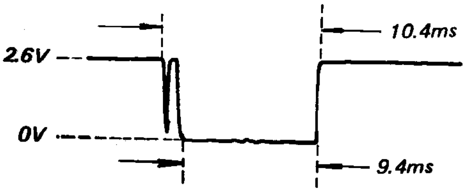
(AC) 2.2V DC



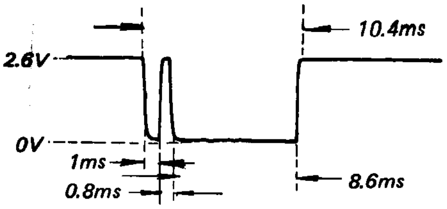
(AD) 2.2V DC



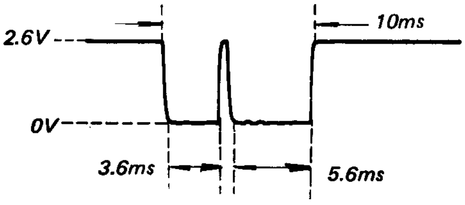
(AE) 2.6V DC



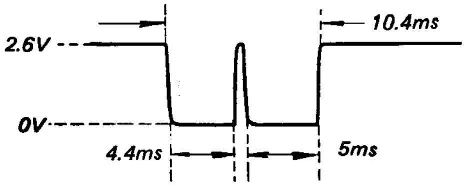
(AF) 2.2V DC



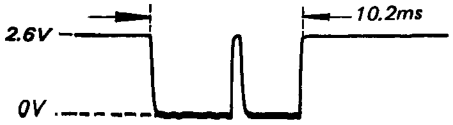
(AG) 2.6V DC



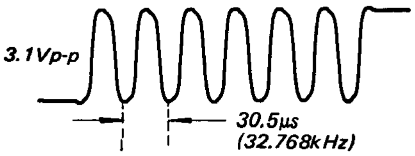
(AH) 2.6V DC



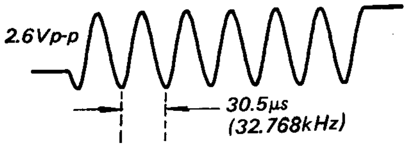
AI 2.6V DC


2.6V
0V
10.2ms

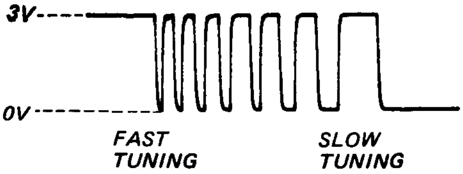
AJ 1.25V DC


3.1Vp-p
30.5µs
(32.768kHz)

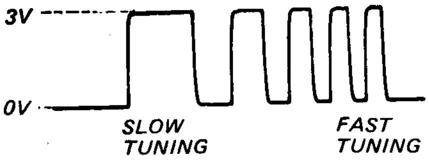
AK


2.6Vp-p
30.5µs
(32.768kHz)

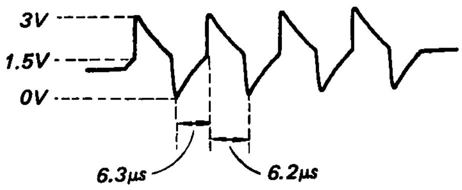
AL 3V DC or 0V DC


3V
0V
FAST TUNING
SLOW TUNING

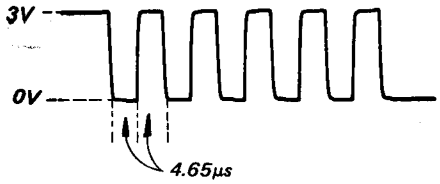
AM 3V DC or 0V DC


3V
0V
SLOW TUNING
FAST TUNING

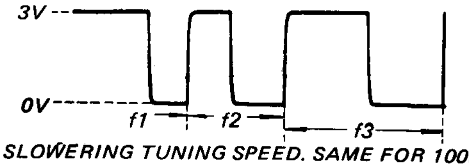
AN 1.25V DC


3V
1.5V
0V
6.3µs
6.2µs

AO 1.5V DC

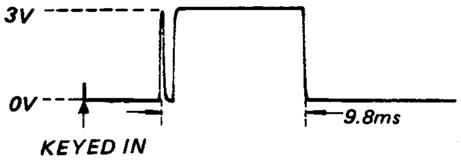


AP 3V DC or 0V DC

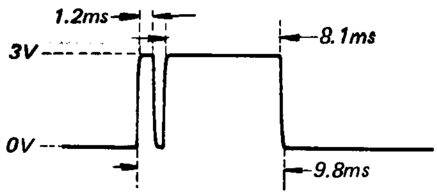

3V
0V
f1
f2
f3

SLOWERING TUNING SPEED. SAME FOR 100Hz AND 1kHz RESOLUTION.

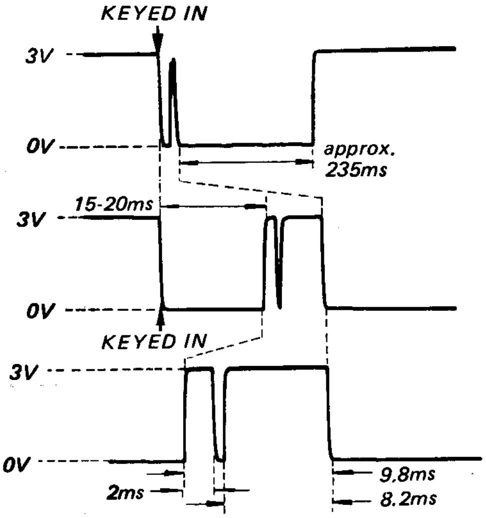
AQ KEY OFF: 3V, KEY ON: 0V


3V
0V
KEYED IN
9.8ms

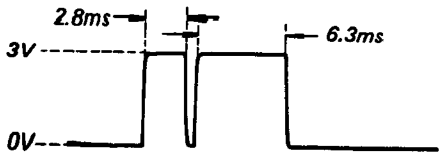
AR 2.95V DC


1.2ms
8.1ms
3V
0V
9.8ms

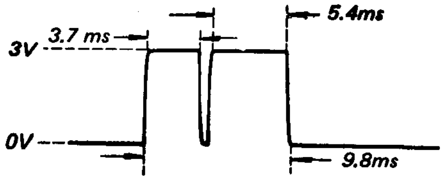
AS 2.95V DC


KEYED IN
3V
0V
approx. 235ms
15-20ms
3V
0V
KEYED IN
3V
0V
2ms
9.8ms
8.2ms

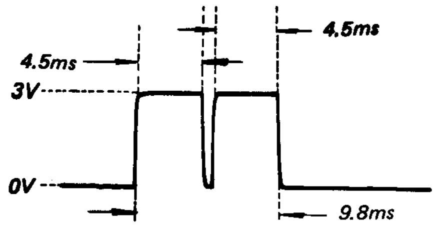
AT 2.95V DC


2.8ms
6.3ms
3V
0V

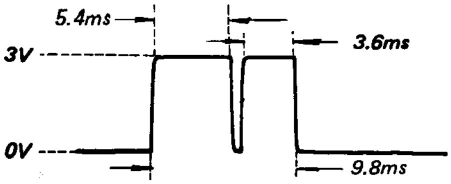
AU 2.95V DC


5.4ms
3.7 ms
3V
0V
9.8ms

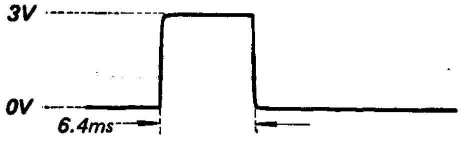
AV 2.95V DC


4.5ms
4.5ms
3V
0V
9.8ms

AW 2.95V DC


5.4ms
3.6ms
3V
0V
9.8ms

AX 2.95V DC



BA 3V DC OR 0V DC

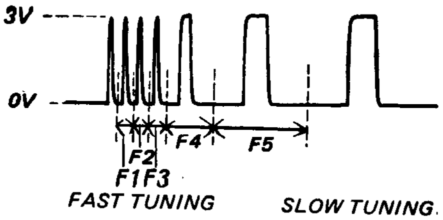
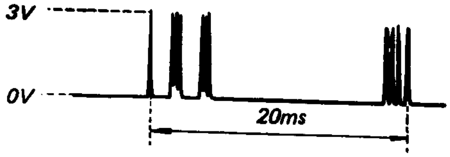
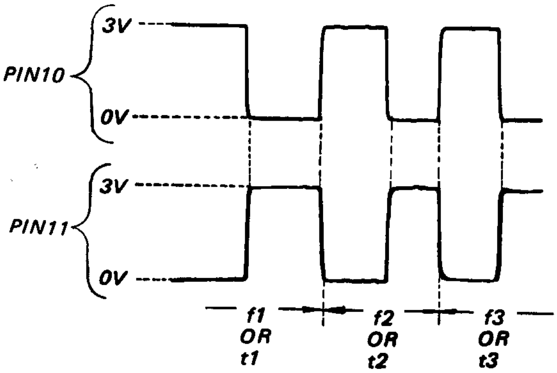

3V
0V
F4
F5
F2
F1F3
FAST TUNING
SLOW TUNING

FIGURE ON LCD DISPLAY SUCCESSIVELY CHANGES DURING EACH DURATION F1 THROUGH F5, ETC.

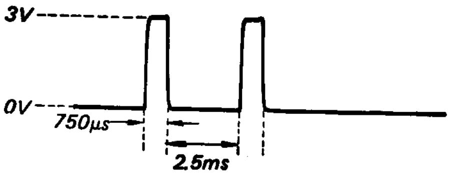
BB 0V DC
WHEN TUNING KNOB IS TURNED



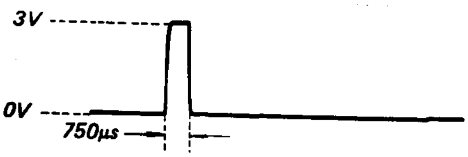
BC 3V DC OR 0V DC
WHEN TUNING KNOB IS TURNED IN BOTH FREQUENCY AND TIMER SETTINGS.


3V
PIN10
0V
3V
PIN11
0V
f1 OR t1
f2 OR t2
f3 OR t3

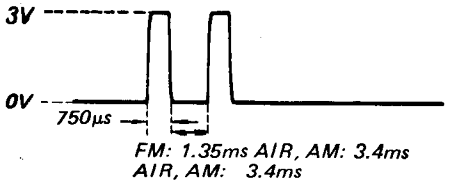
BD 0V DC
WHEN AM OR AIR SWITCH IS PRESSED, MOMENTARILY TWO PULSES.


3V
0V
750μs
2.5ms

BE 0V DC
WHEN AM SWITCH IS PRESSED TWICE OR a1 THROUGH d8 SWITCH IS PRESSED ONCE, MOMENTARILY ONE PULSE.

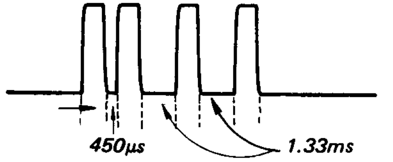


(BF) 0V DC
WHEN BAND SWITCH IS PRESSED INITIALLY, MOMENTARILY TWO PULSES.


3V
0V
750μs
FM: 1.35ms AIR, AM: 3.4ms
AIR, AM: 3.4ms

WHEN EACH BAND SWITCH IS PRESSED TWICE, WAVEFORM CHANGES TO (BE).

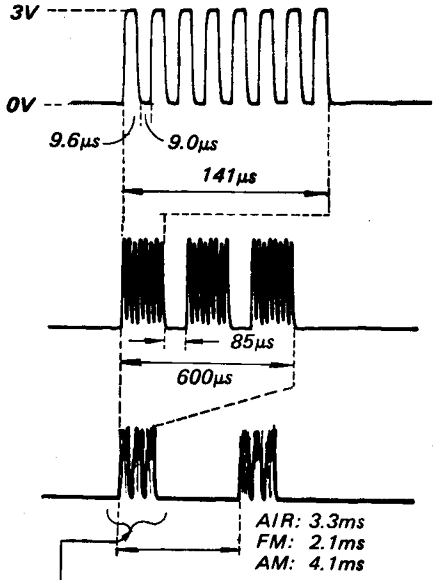
(BG) 0V DC
WHEN AM OR AIR SWITCH IS KEYED IN INITIALLY, MOMENTARILY FOUR PULSES.


450μs
1.33ms

WHEN BAND IS CHANGED TO FM, WAVEFORM CHANGES TO (BF). WHEN AIR IS PRESSED TWICE, WAVEFORM CHANGES TO (BE).

WHEN AM IS PRESSED TWICE, WAVEFORM CHANGES TO (BF)

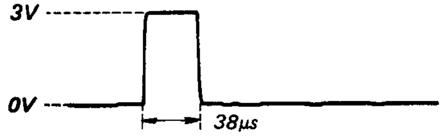
(BH) 0V DC


3V
0V
9.6μs
9.0μs
141μs
85μs
600μs
AIR: 3.3ms
FM: 2.1ms
AM: 4.1ms

WHEN AM SWITCH PRESSED TWICE, RIGHT-SIDE THREE PULSE GROUP DISSAPPEARS.

IN SCAN START/STOP MODE, LEFT-SIDE THREE PULSE GROUP ONLY FLICKERS.

(BI) 0V DC
WHEN AM OR AIR SWITCH IS KEYED AFTER POWER ON, MOMENTARILY.



WHEN FM KEYED IN:
UNCHANGED 0V DC

SEGMENTS AND COMMONS OF LIQUID – CRYSTAL DISPLAY PANEL

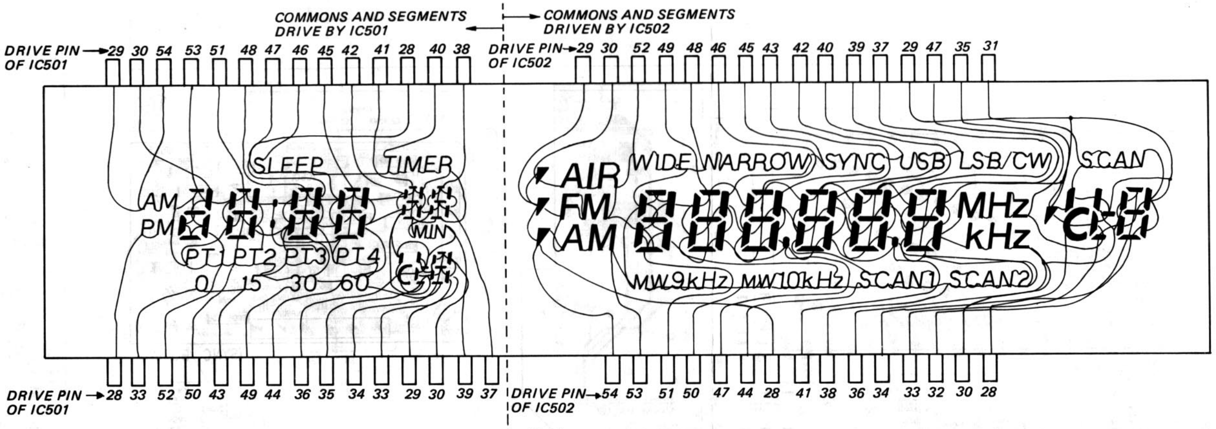

COMMONS AND SEGMENTS DRIVE BY IC501
COMMONS AND SEGMENTS DRIVEN BY IC502
DRIVE PIN OF IC501 29 30 54 53 51 48 47 46 45 42 41 28 40 38
DRIVE PIN OF IC502 29 30 52 49 48 46 45 43 42 40 39 37 29 47 35 31
SLEEP
TIMER
AM
PM
MIN
PT1 PT2 PT3 PT4
0 15 30 60
CH
AIR
FM
AM
WIDE NARROW SYNC USB LSB/CW
SCAN
MHz
kHz
CH
MW9kHz MW10kHz SCAN1 SCAN2
DRIVE PIN OF IC501 28 33 52 50 43 49 44 36 35 34 33 29 30 39 37
DRIVE PIN OF IC502 54 53 51 50 47 44 28 41 38 36 34 33 32 30 28

Fig. 1

NOTE: DOUBLED PIN NUMBERS ARE CONNECTED BY PRINTED CIRCUIT BOARD PATTERNS AS SHOWN IN MOUNTING DIAGRAM.

——: SEGMENT GROUPS DRIVEN BY IC501 AND IC502.

▬▬: COMMON GROUPS DRIVEN BY IC501 AND IC502.

8-BIT INPUT GROUPING

KEY-INPUT SWITCHES ARE DIVIDED INTO 9(NINE) GROUPS AS SHOWN IN FIG'. 2 BELOW TO UTILIZE 8–BIT PRIORITY ENCODER IC503 AND AS OUTLINED FOR SOME VOLTAGES/WAVEFORM SAMPLES. ALSO REFER TO LOWER-RIGHTHAND CORNER OF SCHEMATIC DIAGRAM.

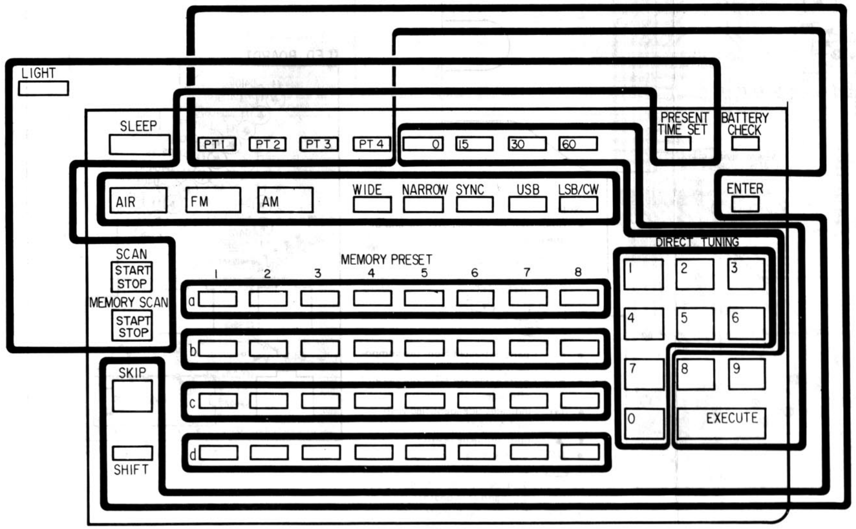

LIGHT
SLEEP
PT1 PT2 PT3 PT4
0 15 30 60
PRESENT TIME SET
BATTERY CHECK
AIR FM AM
WIDE NARROW SYNC USB LSB/CW
ENTER
SCAN START STOP
MEMORY SCAN STAPT STOP
MEMORY PRESET
1 2 3 4 5 6 7 8
a
b
c
d
DIRECT TUNING
1 2 3
4 5 6
7 8 9
0 EXECUTE
SKIP
SHIFT

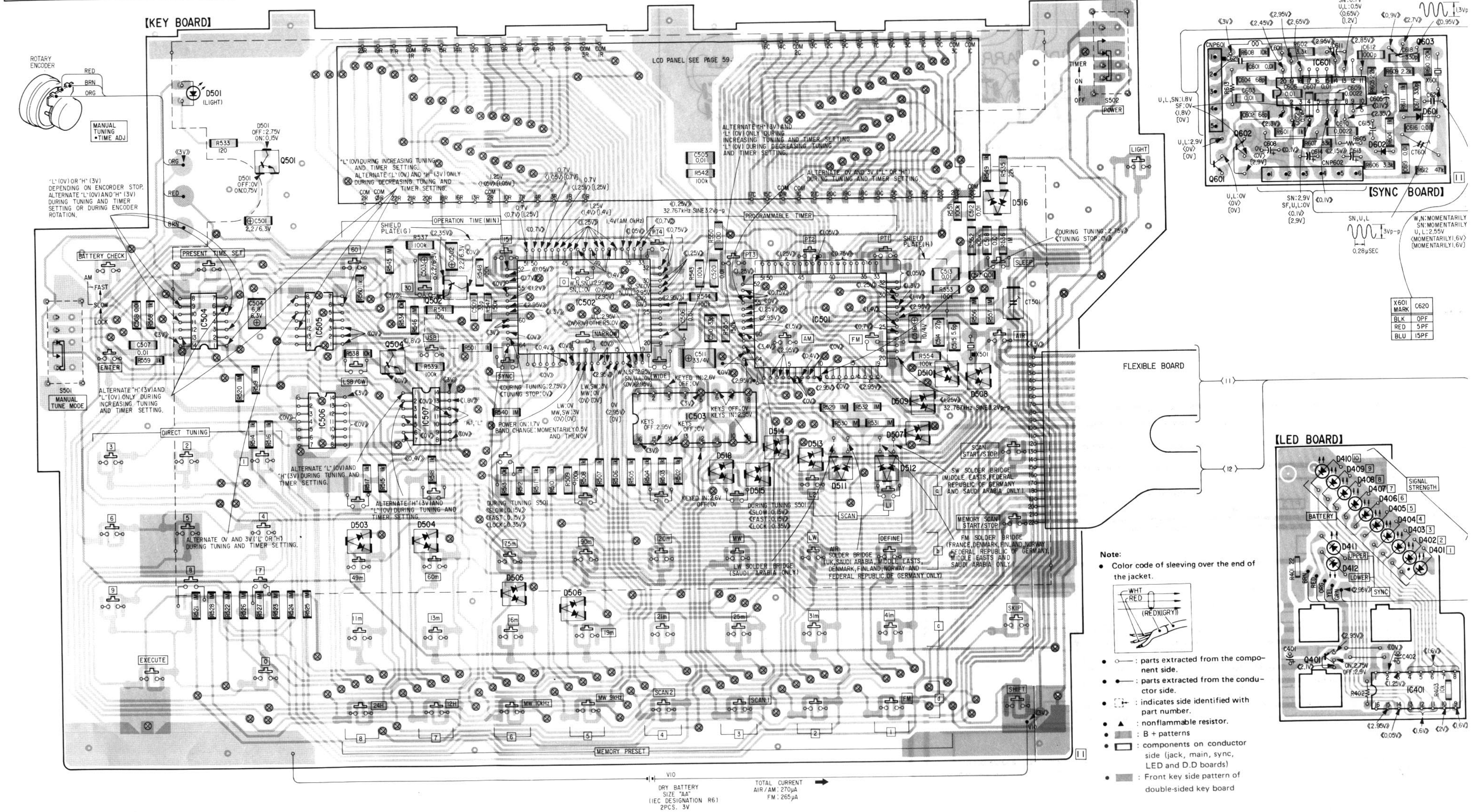
Fig. 2

4-1. MOUNTING DIAGRAM

– Conductor Side –

- REFER TO PAGES 72 FOR SEMICONDUCTOR LEAD LAYOUTS

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
IC·Q			IC504	501 IC505 IC506	504 IC507	502	IC502	IC503		IC501				601 602	IC601 401	603 IC401 602 601
D			501		503 504	505	506		518 515 514	513 511 512	509 507 510 508	516				401—412

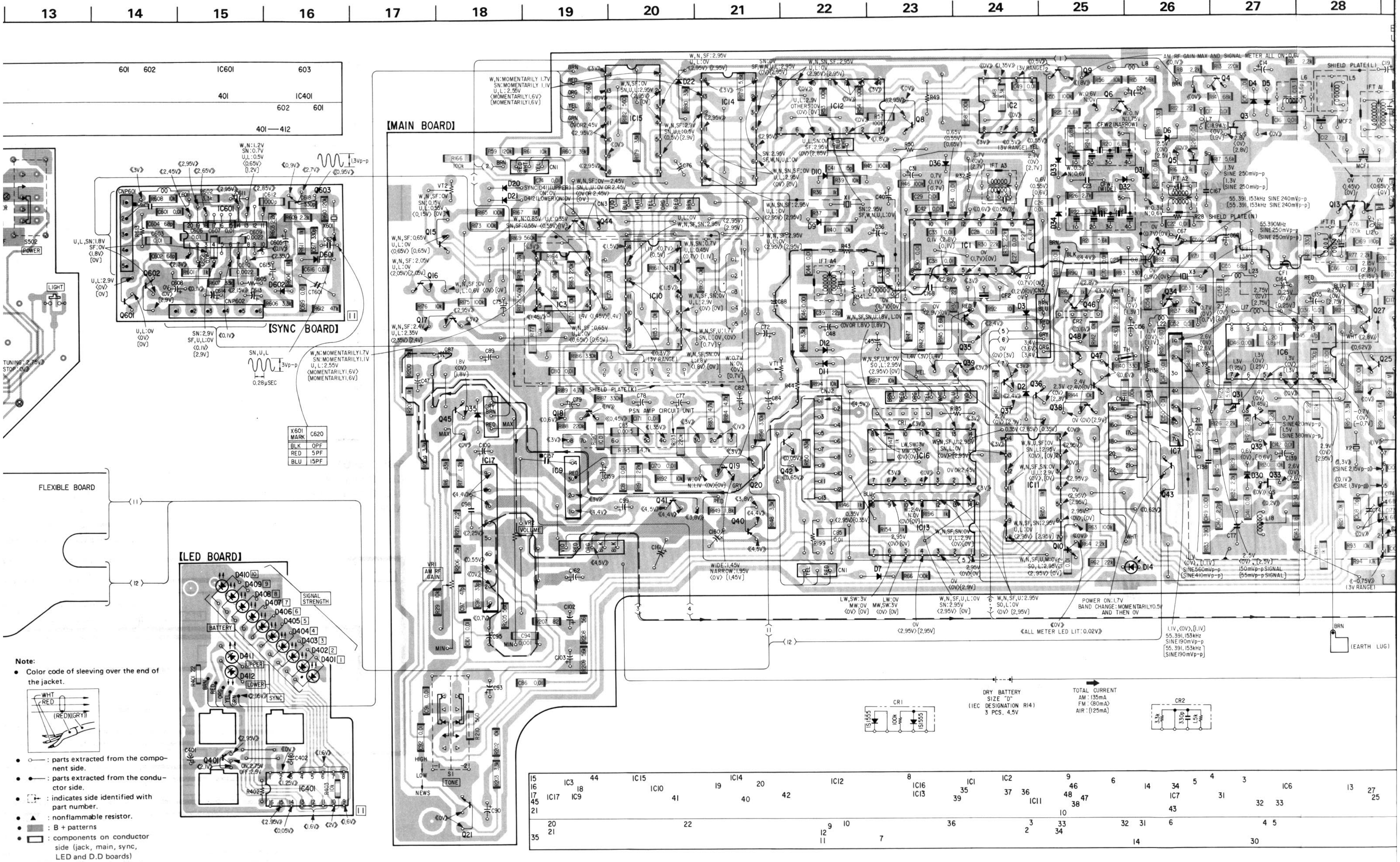

A
B
C
D
E
F
G
H
I
J
[KEY BOARD]
ROTARY ENCODER
RED
BRN
ORG
MANUAL TUNING •TIME ADJ
D501 (LIGHT)
R533 120
Q501
D501 OFF:2.75V ON:0.15V
D501 OFF:0V ON:0.75V
"L"(0V) OR "H" (3V) DEPENDING ON ENCORDER STOP. ALTERNATE "L"(0V) AND "H" (3V) DURING TUNING AND TIMER SETTING OR DURING ENCODER ROTATION.
C501 2.2/6.3V
LCD PANEL SEE PAGE 59.
"L"(0V) DURING INCREASING TUNING AND TIMER SETTING. ALTERNATE "L"(0V) AND "H"(3V) ONLY DURING DECREASING TUNING AND TIMER SETTING.
ALTERNATE "H"(3V) AND "L"(0V) ONLY DURING INCREASING TUNING AND TIMER SETTING. "L"(0V) DURING DECREASING TUNING AND TIMER SETTING.
ALTERNATE 0V AND 3V ("L" OR "H") DURING TUNING AND TIMER SETTING.
C505 0.01
R542 100k
TIMER ON OFF
S502 POWER
LIGHT
D516
SHIELD PLATE(G)
OPERATION TIME(MIN)
PROGRAMMABLE TIMER
SHIELD PLATE(H)
32.767kHz SINE3.2Vp-p
BATTERY CHECK
PRESENT TIME SET
AM FAST SLOW LOCK
IC504
C504 6.8 6.3V
IC505
Q502
Q504
IC502
NARROW
IC501
SLEEP
CT501
C507 0.01
R559 1k
ENTER
S501 MANUAL TUNE MODE
ALTERNATE "H"(3V) AND "L"(0V) ONLY DURING INCREASING TUNING AND TIMER SETTING.
IC506
IC507
USB
LSB/CW
SYNC
WIDE
IC503
KEYS OFF:0V KEYS IN:2.95V
POWER ON:1.7V BAND CHANGE: MOMENTARILY 0.5V AND THEN 0V
D510
D509
D508
X501
D507
D514
D513
D518
D511
D515
D512
DIRECT TUNING
ALTERNATE "L"(0V) AND "H"(3V) DURING TUNING AND TIMER SETTING.
ALTERNATE "H"(3V) AND "L"(0V) DURING TUNING AND TIMER SETTING.
ALTERNATE 0V AND 3V ("L" OR "H") DURING TUNING AND TIMER SETTING.
DURING TUNING S501 (SLOW:0.15V) (FAST:0.15V) (LOCK:0.35V)
KEYED IN:2.6V OFF:0V
SCAN
SCAN START/STOP
SW SOLDER BRIDGE (MIDDLE EASTS, FEDERAL REPUBLIC OF GERMANY AND SAUDI ARABIA ONLY)
MEMORY SCAN START/STOP
FM SOLDER BRIDGE (FRANCE, DENMARK, FINLAND, NORWAY, FEDERAL REPUBLIC OF GERMANY, MIDDLE EASTS AND SAUDI ARABIA ONLY)
AIR SOLDER BRIDGE (UK, SAUDI ARABIA, MIDDLE EASTS, DENMARK, FINLAND, NORWAY AND FEDERAL REPUBLIC OF GERMANY ONLY)
LW SOLDER BRIDGE (SAUDI ARABIA ONLY)
MW
LW
DEFINE
D503
D504
D505
D506
49m
60m
25m
90m
120m
11m
13m
16m
19m
21m
25m
31m
41m
SKIP
EXECUTE
24H
12H
MW 10kHz
MW 9kHz
SCAN2
SCAN1
FM
SHIFT
MEMORY PRESET
DRY BATTERY SIZE "AA" (IEC DESIGNATION R6) 2PCS. 3V
TOTAL CURRENT AIR/AM: 270μA FM: 265μA
FLEXIBLE BOARD
[SYNC BOARD]
CNP601
IC601
Q603
D601
Q602
Q601
D602
CNP602
X601 MARK | C620
BLK | 0PF
RED | 5PF
BLU | 15PF
0.28μSEC
3Vp-p
[LED BOARD]
SIGNAL STRENGTH
BATTERY
UPPER
LOWER
SYNC
D401
D402
D403
D404
D405
D406
D407
D408
D409
D410
D411
D412
Q401
IC401
C401
C402
ON:2.75V OFF:2.9V

Note:

- Color code of sleeving over the end of the jacket.

WHT RED (RED)(GRY)

- ○—: parts extracted from the component side.
- ●—: parts extracted from the conductor side.
- ⬚: indicates side identified with part number.
- ▲ : nonflammable resistor.
- ▨ : B + patterns
- ▭ : components on conductor side (jack, main, sync, LED and D.D boards)
- ▨ : Front key side pattern of double-sided key board


13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
【MAIN BOARD】
【SYNC BOARD】
【LED BOARD】
FLEXIBLE BOARD
S502
POWER
LIGHT
TUNING: 2.75V
STOP: 0V
SIGNAL STRENGTH
BATTERY
UPPER
LOWER
SYNC
SHIELD PLATE (L)
SHIELD PLATE (N)
SHIELD PLATE (K)
PSN AMP CIRCUIT UNIT
AM RF GAIN MAX AND SIGNAL METER ALL ON: 0.6V
VR1 AM RF GAIN
VR2 VOLUME
S1 TONE
HIGH
LOW
NEWS
MAX
MIN
BRN
(EARTH LUG)
POWER ON: 1.7V
BAND CHANGE: MOMENTARILY 0.5V AND THEN 0V
《ALL METER LED LIT: 0.02V》
DRY BATTERY SIZE "D" (IEC DESIGNATION R14) 3 PCS. 4.5V
TOTAL CURRENT AM: 135mA FM: (80mA) AIR: (125mA)
CR1
CR2
0.28μSEC
3Vp-p
1.3Vp-p

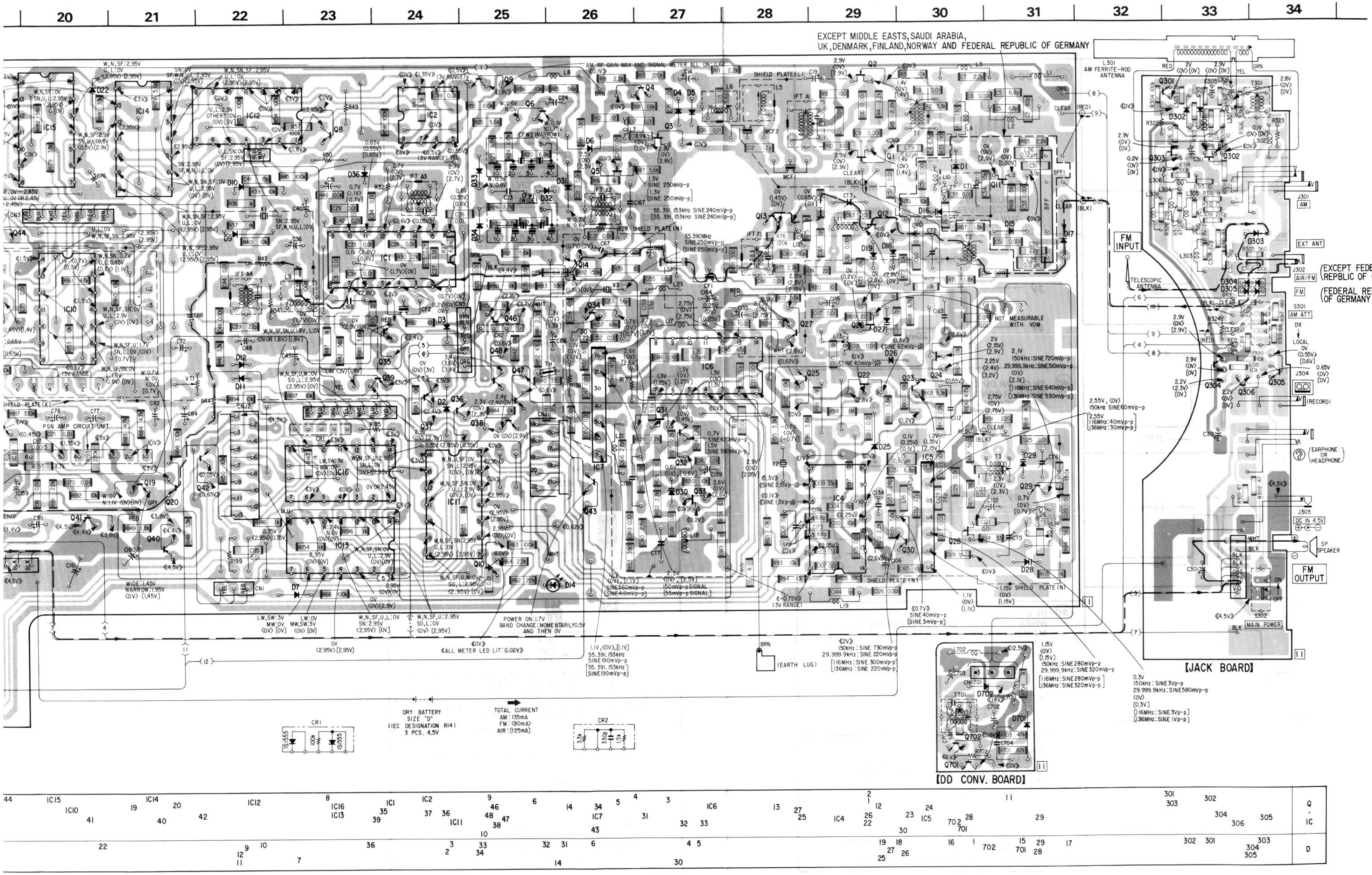
X601 MARK	C620
BLK	0PF
RED	5PF
BLU	15PF

Note:

- Color code of sleeving over the end of the jacket.

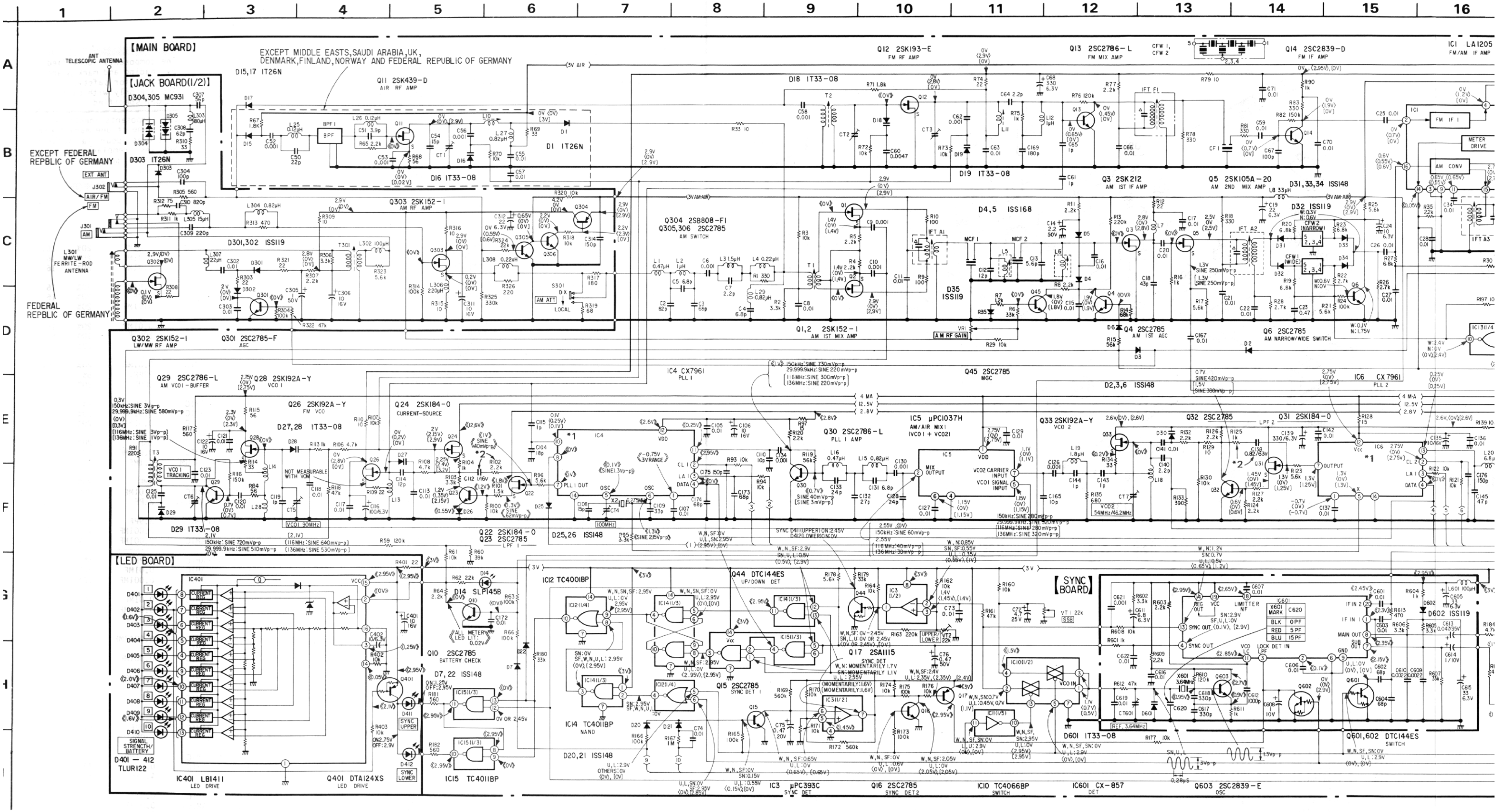
WHT
RED
(RED)((GRY))

- ○— : parts extracted from the component side.
- ●— : parts extracted from the conductor side.
- ⬚⊢ : indicates side identified with part number.
- ▲ : nonflammable resistor.
- ▨ : B + patterns
- ☐ : components on conductor side (jack, main, sync, LED and D.D boards)
- ▨ : Front key side pattern of double-sided key board


20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
EXCEPT MIDDLE EASTS, SAUDI ARABIA, UK, DENMARK, FINLAND, NORWAY AND FEDERAL REPUBLIC OF GERMANY
AM RF GAIN MAX AND SIGNAL METER ALL ON: 0.6V
L301 AM FERRITE-ROD ANTENNA
SHIELD PLATE (L)
SHIELD PLATE (N)
SHIELD PLATE (K)
PSN AMP CIRCUIT UNIT
FM INPUT
TELESCOPIC ANTENNA
(EXCEPT FEDERAL REPBLIC OF GERMANY)
(FEDERAL REPUBLIC OF GERMANY)
J301 AM
EXT ANT
J302 AIR/FM
S301 AM ATT
DX
LOCAL
J304
(RECORD)
EARPHONE OR HEADPHONE
J305 DC IN 4.5V
SPEAKER
FM OUTPUT
S302 MAIN POWER
NOT MEASURABLE WITH VOM
55.391.153kHz SINE 240mVp-p
55.390MHz SINE 250mVp-p
150kHz: SINE 720mVp-p
29,999.9kHz: SINE 510mVp-p
[116MHz: SINE 640mVp-p]
[136MHz: SINE 530mVp-p]
POWER ON: 1.7V BAND CHANGE: MOMENTARILY 0.5V AND THEN 0V
《ALL METER LED LIT: 0.02V》
(EARTH LUG)
150kHz: SINE 730mVp-p
29,999.9kHz: SINE 220mVp-p
[116MHz: SINE 300mVp-p]
[136MHz: SINE 220mVp-p]
150kHz: SINE 280mVp-p
29,999.9kHz: SINE 320mVp-p
[116MHz: SINE 280mVp-p]
[136MHz: SINE 320mVp-p]
0.3V
150kHz: SINE 3Vp-p
29,999.9kHz: SINE 580mVp-p
[116MHz: SINE 3Vp-p]
[136MHz: SINE 1Vp-p]
DRY BATTERY SIZE "D" (IEC DESIGNATION R14) 3 PCS. 4.5V
TOTAL CURRENT AM: 135mA FM: (80mA) AIR: [125mA]
CR1
CR2
【JACK BOARD】
【DD CONV. BOARD】
Q
IC
D

4-2. SCHEMATIC DIAGRAM

See pages 36–58 for detailed voltages and waveforms.


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
A
B
C
D
E
F
G
H
[MAIN BOARD]
[JACK BOARD(1/2)]
[LED BOARD]
[SYNC BOARD]
ANT TELESCOPIC ANTENNA
EXCEPT MIDDLE EASTS,SAUDI ARABIA,UK, DENMARK,FINLAND,NORWAY AND FEDERAL REPUBLIC OF GERMANY
EXCEPT FEDERAL REPBLIC OF GERMANY
FEDERAL REPBLIC OF GERMANY
EXT ANT
AIR/FM
FM
AM
L301 MW/LW FERRITE-ROD ANTENNA
D304,305 MC931
D303 1T26N
D15,17 1T26N
Q11 2SK439-D AIR RF AMP
D1 1T26N
D16 1T33-08
Q303 2SK152-I AM RF AMP
Q304 2SB808-F1
Q305,306 2SC2785 AM SWITCH
D301,302 1SS119
Q302 2SK152-I LW/MW RF AMP
Q301 2SC2785-F AGC
S301 DX LOCAL
AM ATT
D18 1T33-08
Q12 2SK193-E FM RF AMP
Q13 2SC2786-L FM MIX AMP
CFW 1, CFW 2
Q14 2SC2839-D FM IF AMP
IC1 LA1205 FM/AM IF AMP
FM IF
AM CONV
METER DRIVE
D19 1T33-08
Q3 2SK212 AM 1ST IF AMP
Q5 2SK105A-20 AM 2ND MIX AMP
D31,33,34 1SS148
D32 1SS119
D4,5 1SS168
D35 1SS119
Q1,2 2SK152-I AM 1ST MIX AMP
AM RF GAIN
Q45 2SC2785 MGC
Q4 2SC2785 AM 1ST AGC
Q6 2SC2785 AM NARROW/WIDE SWITCH
D2,3,6 1SS148
IC4 CX7961 PLL 1
IC6 CX7961 PLL 2
Q29 2SC2786-L AM VCO1-BUFFER
Q28 2SK192A-Y VCO 1
Q26 2SK192A-Y FM VCO
Q24 2SK184-O CURRENT-SOURCE
D27,28 1T33-08
D29 1T33-08
VCO1 TRACKING
VCO1 30MHz
NOT MEASURABLE WITH VOM
Q22 2SK184-O
Q23 2SC2785 LPF 1
D25,26 1SS148
IC5 μPC1037H AM/AIR MIX 1 (VCO1 + VCO2)
Q30 2SC2786-L PLL 1 AMP
Q33 2SK192A-Y VCO 2
Q32 2SC2785
Q31 2SK184-O
LPF 2
VCO2 54MHz/62MHz
IC401 LB1411 LED DRIVE
Q401 DTA124XS LED DRIVE
D401 — 412 TLUR122
SIGNAL STRENGTH/ BATTERY
D14 SLP1458
Q10 2SC2785 BATTERY CHECK
ALL METER LED LIT
D7,22 1SS148
SYNC UPPER
SYNC LOWER
IC15 TC4011BP
IC12 TC4001BP
IC14 TC4011BP NAND
D20,21 1SS148
Q44 DTC144ES UP/DOWN DET
Q15 2SC2785 SYNC DET 1
Q17 2SA1115 SYNC DET
IC3 μPC393C SYNC DET
Q16 2SC2785 SYNC DET 2
IC10 TC4066BP SWITCH
D601 1T33-08
IC601 CX-857 DET
Q603 2SC2839-E OSC
Q601,602 DTC144ES SWITCH
D602 1SS119
REF. 3.64MHz
IC601 LIMITTER VCO LOCK DET IN
X601 MARK C620
BLK OPF
RED 5PF
BLU 15PF
MAIN OUT
SYNC OUT
IF IN
*1
*2
3Vp-p
1.3Vp-p
0.28μS

Note:

- All capacitors are in μF unless otherwise noted. pF: μμF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/5W or less unless otherwise specified.

- Switch

Ref. No.	Switch	Position
S1	TONE	HIGH
S301	AM ATT	DX
S302	MAIN POWER	OFF
S501	MANUAL TUNE MODE	LOCK
S502	POWER	OFF

- ☐ : adjustment for repair.
- Power voltages are 3.0 V and 4.5 V and fed to respective circuit boards from regulated power supplies.
  Voltages are dc with respect to ground in no-input-signal mode unless otherwise specified with a VOM (50 kΩ/V).
  Voltage variations may be noted due to normal production tolerances.

no mark : AM
[ ] : AIR
< > : FM
≪ ≫ : COMMON

W: WIDE ON
N: NARROW ON
SN: SYNC ON
SF: SYNC OFF
U: USB ON
L: LSB/CW ON

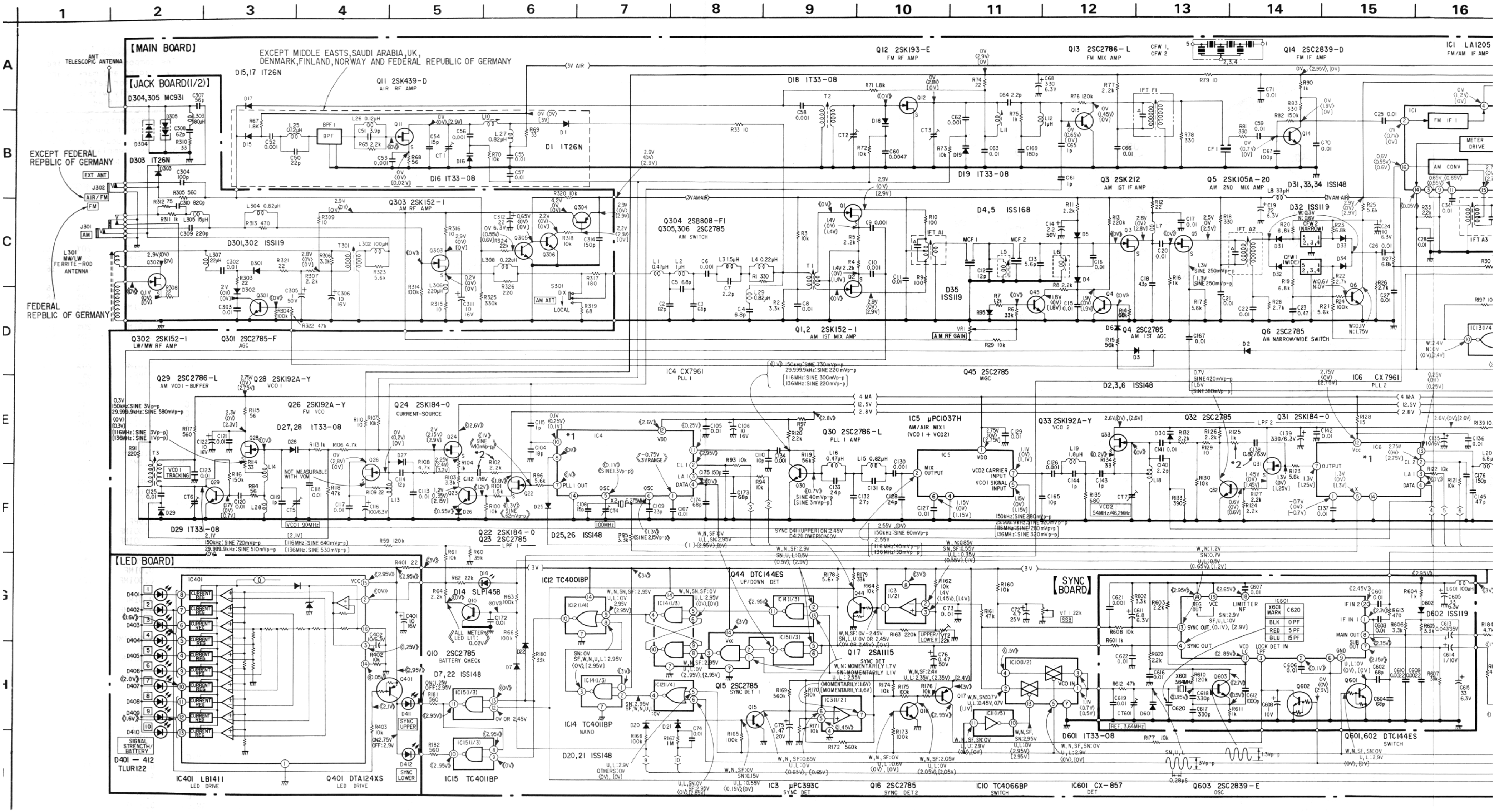
- Waveforms are taken to ground in no-input-signal mode by using oscilloscope.
  Voltage variations may be noted due to normal production tolerances.

*1 Be sure to see Servicing note on page 86 (b
when replacing IC4 and/or IC6.

*2 See page 86, since the capacities and the re
values are different by the type of IC4 and

4-2. SCHEMATIC DIAGRAM

See pages 36–58 for detailed voltages and waveforms.


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
A
B
C
D
E
F
G
H
[MAIN BOARD]
[JACK BOARD(1/2)]
[LED BOARD]
[SYNC BOARD]
ANT TELESCOPIC ANTENNA
EXCEPT MIDDLE EASTS,SAUDI ARABIA,UK, DENMARK,FINLAND,NORWAY AND FEDERAL REPUBLIC OF GERMANY
EXCEPT FEDERAL REPBLIC OF GERMANY
FEDERAL REPBLIC OF GERMANY
EXT ANT
AIR/FM
FM
AM
L301 MW/LW FERRITE-ROD ANTENNA
D304,305 MC931
D303 1T26N
D15,17 1T26N
D1 1T26N
D16 1T33-08
D18 1T33-08
D19 1T33-08
Q11 2SK439-D AIR RF AMP
Q12 2SK193-E FM RF AMP
Q13 2SC2786-L FM MIX AMP
Q14 2SC2839-D FM IF AMP
IC1 LA1205 FM/AM IF AMP
FM IF
AM CONV
METER DRIVE
Q303 2SK152-I AM RF AMP
Q304 2SB808-F1
Q305,306 2SC2785 AM SWITCH
D301,302 1SS119
Q302 2SK152-I LW/MW RF AMP
Q301 2SC2785-F AGC
AM ATT
DX
LOCAL
Q1,2 2SK152-I AM 1ST MIX AMP
D4,5 1SS168
D35 1SS119
AM RF GAIN
Q3 2SK212 AM 1ST IF AMP
Q4 2SC2785 AM 1ST AGC
Q5 2SK105A-20 AM 2ND MIX AMP
D31,33,34 1SS148
D32 1SS119
Q6 2SC2785 AM NARROW/WIDE SWITCH
Q45 2SC2785 MGC
D2,3,6 1SS148
IC4 CX7961 PLL 1
IC6 CX7961 PLL 2
Q29 2SC2786-L AM VCO1-BUFFER
Q28 2SK192A-Y VCO 1
Q26 2SK192A-Y FM VCO
D27,28 1T33-08
Q24 2SK184-0 CURRENT-SOURCE
Q22 2SK184-0
Q23 2SC2785 LPF 1
D29 1T33-08
D25,26 1SS148
IC5 µPC1037H AM/AIR MIX1 (VCO1 + VCO2)
Q30 2SC2786-L PLL 1 AMP
Q33 2SK192A-Y VCO 2
Q32 2SC2785
Q31 2SK184-0 LPF 2
VCO1 TRACKING
VCO1 30MHz
VCO2 54MHz/62MHz
NOT MEASURABLE WITH VOM
IC401 LB1411 LED DRIVE
Q401 DTA124XS LED DRIVE
D401 — 412 TLUR122
SIGNAL STRENGTH/ BATTERY
D14 SLP1458
Q10 2SC2785 BATTERY CHECK
D7,22 1SS148
ALL METER LED LIT
IC15 TC4011BP
IC12 TC4001BP
IC14 TC4011BP NAND
D20,21 1SS148
Q44 DTC144ES UP/DOWN DET
Q15 2SC2785 SYNC DET 1
Q17 2SA1115 SYNC DET
IC3 µPC393C SYNC DET
Q16 2SC2785 SYNC DET 2
IC10 TC4066BP SWITCH
IC601 CX-857 DET
Q603 2SC2839-E OSC
Q601,602 DTC144ES SWITCH
D601 1T33-08
D602 1SS119
SYNC UPPER
SYNC LOWER
UPPER/ LOWER
REF. 3.64MHz
IC601 X601 MARK C620
BLK 0PF
RED 5PF
BLU 15PF
LIMITTER
SYNC OUT
MAIN OUT
LOCK DET IN
IF IN
150kHz: SINE 730mVp-p
29.999.9kHz: SINE 220 mVp-p
116MHz: SINE 220mVp-p
136MHz: SINE 220mVp-p
*1
*2

Note:

- All capacitors are in µF unless otherwise noted. pF: µµF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/5W or less unless otherwise specified.

- Switch

Ref. No.	Switch	Position
S1	TONE	HIGH
S301	AM ATT	DX
S302	MAIN POWER	OFF
S501	MANUAL TUNE MODE	LOCK
S502	POWER	OFF

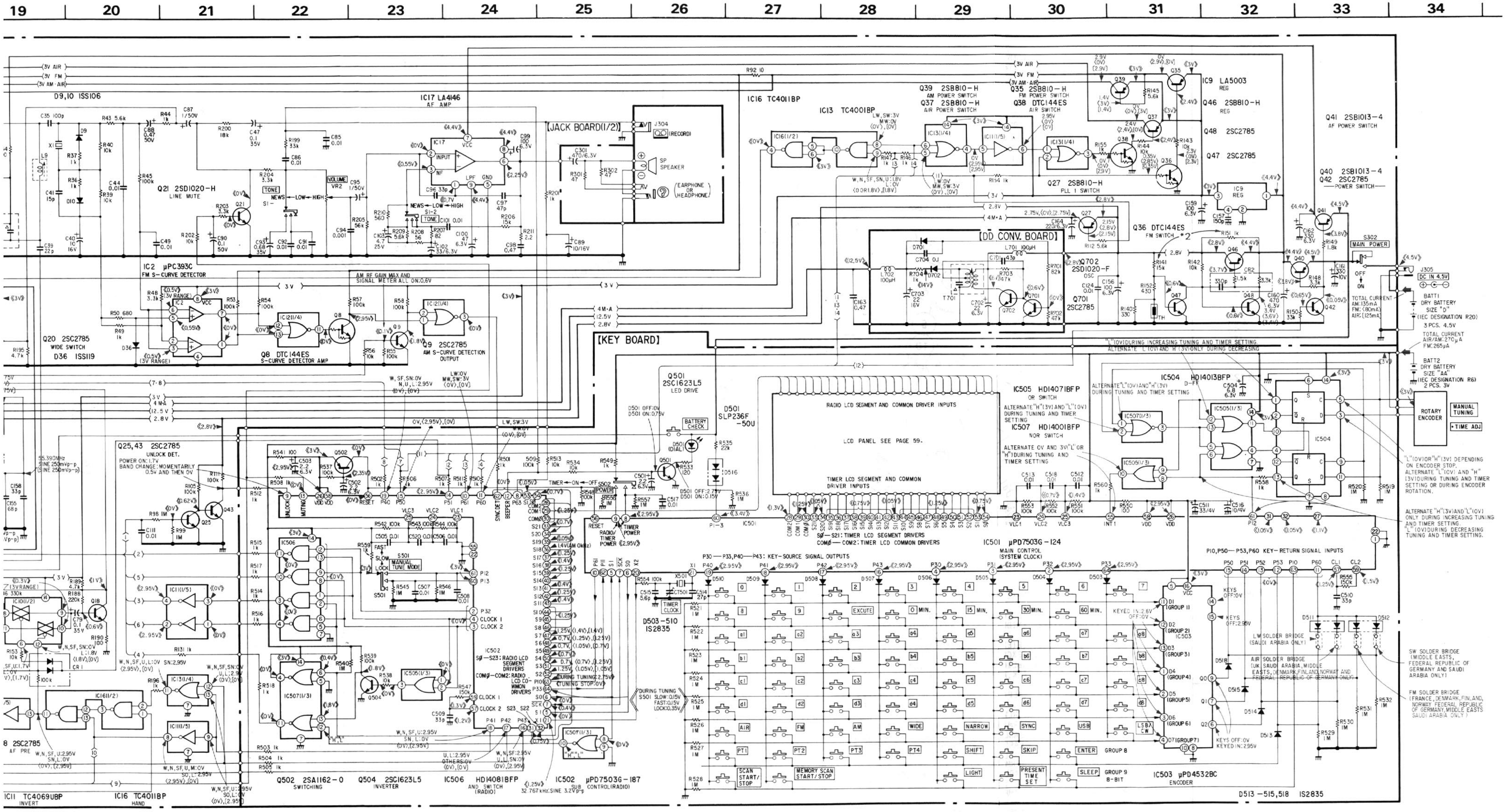
- ▭ : adjustment for repair.
- Power voltages are 3.0 V and 4.5 V and fed to respective circuit boards from regulated power supplies.
  Voltages are dc with respect to ground in no-input-signal mode unless otherwise specified with a VOM (50 kΩ/V).
  Voltage variations may be noted due to normal production tolerances.

no mark	: AM	W: WIDE ON	U: USB ON
[ ]	: AIR	N: NARROW ON	L: LSB/CW ON
< >	: FM	SN: SYNC ON	
≪ ≫	: COMMON	SF: SYNC OFF	

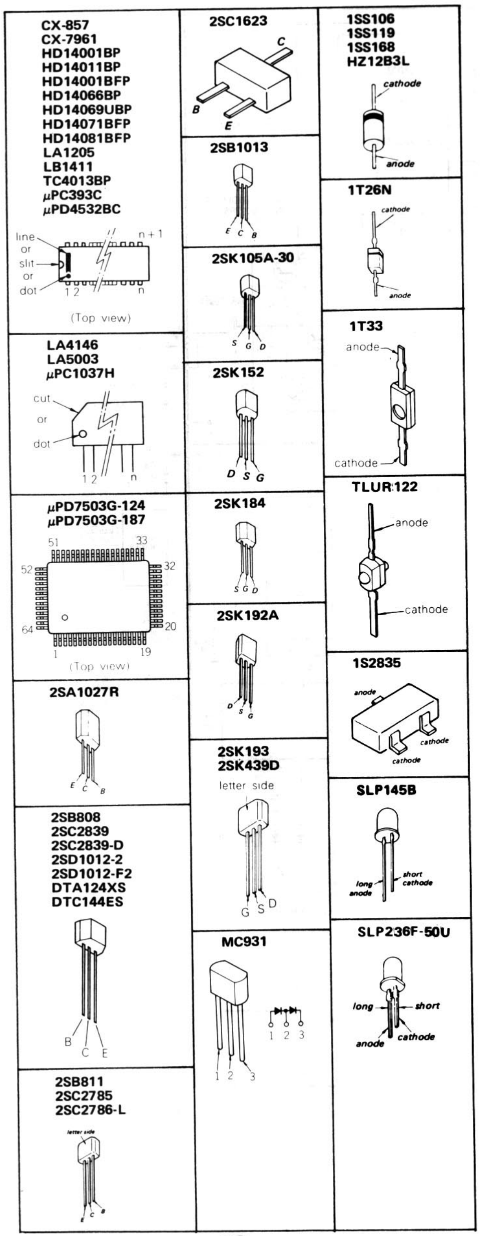
- Waveforms are taken to ground in no-input-signal mode by using oscilloscope.
  Voltage variations may be noted due to normal production tolerances.

*1 Be sure to see Servicing note on page 86 (b when replacing IC4 and/or IC6.

*2 See page 86, since the capacities and the re values are different by the type of IC4 and


19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
D9,10 1SS106
IC17 LA4146
AF AMP
Q21 2SD1020-H
LINE MUTE
VOLUME VR2
TONE
NEWS—LOW—HIGH
JACK BOARD(1/2)
J304 (RECORD)
SP SPEAKER
EARPHONE OR HEADPHONE
IC2 μPC393C
FM S-CURVE DETECTOR
AM RF GAIN MAX AND SIGNAL METER ALL ON:0.6V
Q20 2SC2785
WIDE SWITCH
D36 1SS119
Q8 DTC144ES
S-CURVE DETECTOR AMP
Q9 2SC2785
AM S-CURVE DETECTION OUTPUT
KEY BOARD
IC16 TC4011BP
IC13 TC4001BP
Q39 2SB810-H
AM POWER SWITCH
Q37 2SB810-H
AIR POWER SWITCH
Q35 2SB810-H
FM POWER SWITCH
Q38 DTC144ES
AIR SWITCH
IC9 LA5003
REG
Q46 2SB810-H
REG
Q48 2SC2785
Q47 2SC2785
Q27 2SB810-H
PLL 1 SWITCH
Q41 2SB1013-4
AF POWER SWITCH
Q40 2SB1013-4
Q42 2SC2785
POWER SWITCH
DD CONV. BOARD
Q702 2SD1020-F
OSC
Q701 2SC2785
Q36 DTC144ES
FM SWITCH
S302 MAIN POWER
J305 DC IN 4.5V
OFF
ON
TOTAL CURRENT AM:135mA FM:(80mA) AIR:(125mA)
BATT1 DRY BATTERY SIZE "D" (IEC DESIGNATION R20) 3 PCS. 4.5V
TOTAL CURRENT AIR/AM:270μA FM:265μA
BATT2 DRY BATTERY SIZE "AA" (IEC DESIGNATION R6) 2 PCS. 3V
"L"(0V)DURING INCREASING TUNING AND TIMER SETTING
ALTERNATE "L"(0V) AND "H"(3V) ONLY DURING DECREASING
Q501 2SC1623L5
LED DRIVE
D501 SLP236F -50U
BATTERY CHECK
RADIO LCD SEGMENT AND COMMON DRIVER INPUTS
LCD PANEL SEE PAGE 59.
TIMER LCD SEGMENT AND COMMON DRIVER INPUTS
IC505 HD14071BFP
OR SWITCH
IC507 HD14001BFP
NOR SWITCH
IC504 HD14013BFP
D-FF
ROTARY ENCODER
MANUAL TUNING
TIME ADJ
Q25,43 2SC2785
UNLOCK DET.
POWER ON:1.7V
BAND CHANGE: MOMENTARILY 0.5V AND THEN 0V
55.390MHz
TIMER—ON—OFF
S502 POWER
RESET
RADIO/TIMER POWER
S501
MANUAL TUNE MODE
FAST
SLOW
LOCK
IC506
IC501 μPD7503G-124
MAIN CONTROL (SYSTEM CLOCK)
SØ—S21: TIMER LCD SEGMENT DRIVERS
COMØ—COM2: TIMER LCD COMMON DRIVERS
IC502
SØ—S23: RADIO LCD SEGMENT DRIVERS
COMØ—COM2: RADIO LCD COMMON DRIVERS
P30—P33,P40—P43: KEY-SOURCE SIGNAL OUTPUTS
P10,P50—P53,P60 KEY-RETURN SIGNAL INPUTS
CLOCK 1
CLOCK 2
TIMER CLOCK
D503-510 1S2835
0 MIN.
15 MIN.
30 MIN.
60 MIN.
EXECUTE
AIR
FM
AM
WIDE
NARROW
SYNC
USB
LSB/CW
PT1
PT2
PT3
PT4
SHIFT
SKIP
ENTER
SCAN START/STOP
MEMORY SCAN START/STOP
LIGHT
PRESENT TIME SET
SLEEP
GROUP 8
GROUP 9
8-BIT
IC503 μPD4532BC
ENCODER
KEYS OFF:0V
KEYED IN:2.95V
LW SOLDER BRIDGE (SAUDI ARABIA ONLY)
AIR SOLDER BRIDGE (UK, SAUDI ARABIA, MIDDLE EASTS, DENMARK, FINLAND, NORWAY AND FEDERAL REPUBLIC OF GERMANY ONLY)
SW SOLDER BRIDGE (MIDDLE EASTS, FEDERAL REPUBLIC OF GERMANY AND SAUDI ARABIA ONLY)
FM SOLDER BRIDGE (FRANCE, DENMARK, FINLAND, NORWAY, FEDERAL REPUBLIC OF GERMANY, MIDDLE EASTS, SAUDI ARABIA ONLY)
"L"(0V) OR "H"(3V) DEPENDING ON ENCODER STOP. ALTERNATE "L"(0V) AND "H"(3V) DURING TUNING AND TIMER SETTING OR DURING ENCODER ROTATION.
ALTERNATE "H"(3V) AND "L"(0V) ONLY DURING INCREASING TUNING AND TIMER SETTING. "L"(0V) DURING DECREASING TUNING AND TIMER SETTING.
D513-515,518 1S2835
IC11 TC4069UBP
INVERT
IC16 TC4011BP
HAND
Q18 2SC2785
AF PRE
Q502 2SA1162-O
SWITCHING
Q504 2SC1623L5
INVERTER
IC506 HD14081BFP
AND SWITCH (RADIO)
IC502 μPD7503G-187
SUB CONTROL (RADIO)
32.767kHz: SINE 3.2Vp-p
DURING TUNING S501 SLOW:0.5V FAST:0.5V LOCK:0.35V

- **Semiconductor lead layouts**


CX-857
CX-7961
HD14001BP
HD14011BP
HD14001BFP
HD14066BP
HD14069UBP
HD14071BFP
HD14081BFP
LA1205
LB1411
TC4013BP
μPC393C
μPD4532BC
line
or
slit
or
dot
n+1
1 2
n
(Top view)
LA4146
LA5003
μPC1037H
cut
or
dot
1 2
n
μPD7503G-124
μPD7503G-187
51
33
52
32
64
20
1
19
(Top view)
2SA1027R
E C B
2SB808
2SC2839
2SC2839-D
2SD1012-2
2SD1012-F2
DTA124XS
DTC144ES
B C E
2SB811
2SC2785
2SC2786-L
letter side
E C B
2SC1623
C
B
E
2SB1013
E C B
2SK105A-30
S G D
2SK152
D S G
2SK184
S G D
2SK192A
D S G
2SK193
2SK439D
letter side
G S D
MC931
1 2 3
1 2 3
1SS106
1SS119
1SS168
HZ12B3L
cathode
anode
1T26N
cathode
anode
1T33
anode
cathode
TLUR122
anode
cathode
1S2835
anode
cathode
cathode
SLP145B
long
anode
short
cathode
SLP236F-50U
long
short
anode
cathode

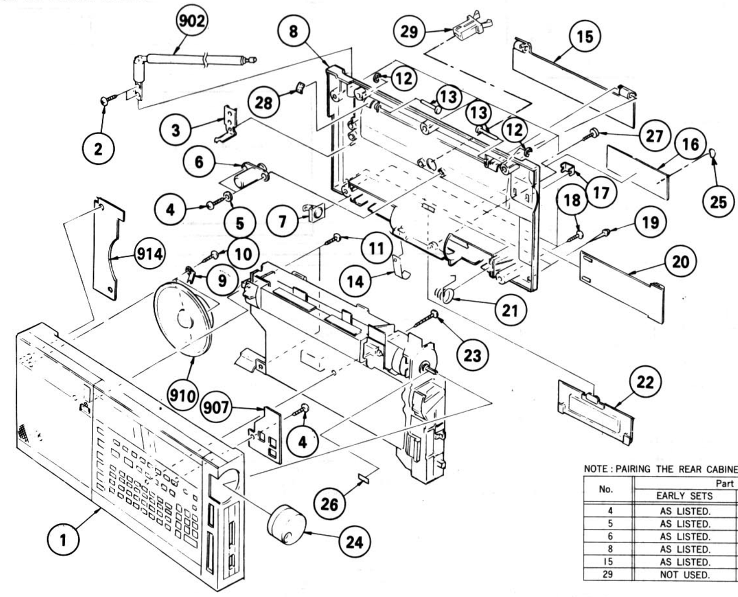
SECTION 5
EXPLODED VIEWS AND PARTS LIST

NOTE :
- The mechanical parts with no reference number in the exploded views are not supplied.
- Items marked " ★ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The construction parts of an assembled part are indicated with a collation number on the remark column.

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Les composants identifiés par une trame et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

(1)


902
8
29
15
12
13
13
12
28
3
2
27
16
6
17
18
25
4
5
7
19
914
10
11
9
14
20
21
23
22
910
907
4
26
24
1

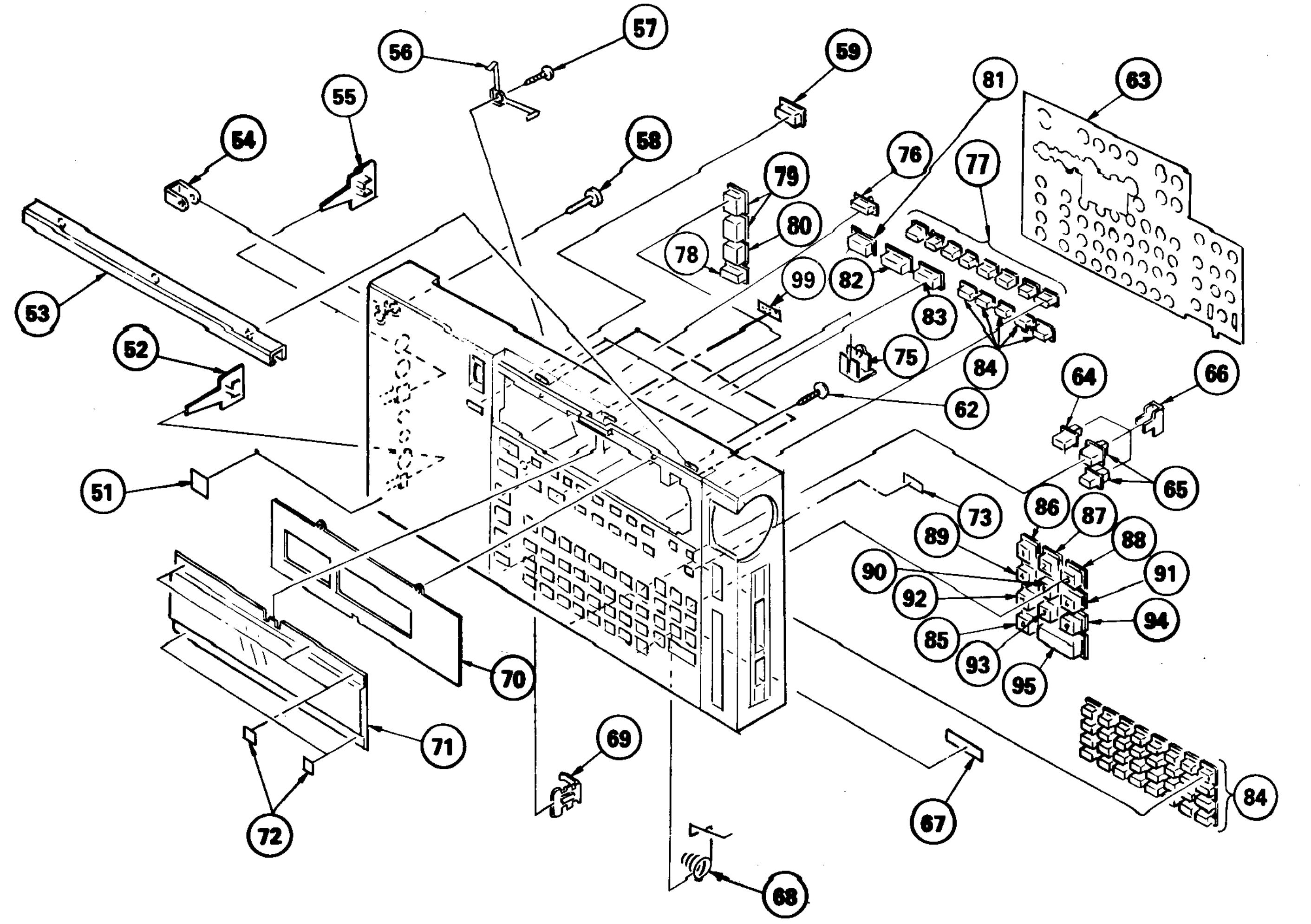
NOTE : PAIRING THE REAR CABINET AND STAND

No.	Part No.	
	EARLY SETS	LATER SETS
4	AS LISTED.	NOT USED.
5	AS LISTED.	NOT USED.
6	AS LISTED.	NOT USED.
8	AS LISTED.	AS LISTED.
15	AS LISTED.	AS LISTED.
29	NOT USED.	AS LISTED.

No.	Part No.	Description	REMARKS
1	X-3894-511-1	(US,Canadian)....CABINET ASSY, FRONT	
	X-3894-512-1	(MIDDLE EASTS AND SAUDI ARABIA) ....CABINET ASSY, FRONT	
	X-3894-513-1	(E(EXCEPT MIDDLE EASTS,SAUDI ARABIA),AUS, AEP(EXCEPT DENMARK,FINLAND,NORWAY,FEDERAL REPUBLIC OF GERMANY))...CABINET ASSY, FRONT	
	X-3894-514-1	(UK,AEP(DENMARK,FINLAND,NORWAY)) ...CABINET ASSY, FRONT	
	X-3894-515-1	(AEP(FEDERAL REPUBLIC OF GERMANY) ....CABINET ASSY, FRONT	
2	7-682-547-09	SCREW +B 3X6	
3	3-894-516-01	TERMINAL BOARD, ANTENNA	
4	7-685-132-19	(EARLY SETS)...SCREW +BTP 2.6X5 TYPE2 N-S	
5	7-688-002-11	(EARLY SETS)...WASHER, 2.6 (MIDDLE)	
6	3-894-511-01	(EARLY SETS)...LATCH, MAGNET	
7	3-894-513-01	TERMINAL BOARD (1), PLUS	
8	3-894-552-02	(EARLY SETS)...CABINET (REAR)	
8	3-894-552-03	(LATER SETS)...CABINET (REAR)	
9	3-571-320-00	CLAMP, SP	
10	7-685-646-71	SCREW +BVTP 3X8 TYPE2 IT-3	
11	7-685-146-19	SCREW +BTP 3X8 TYPE2 N-S	
12	7-624-105-04	STOP RING 2.3, TYPE -E	
13	*3-894-508-01	PIN, STAND	
14	9-911-816-01	CLOTH, BATTERY DRAWER	
15	A-3635-188-A	(EARLY SETS)...STAND ASSY	
15	3-894-547-04	(LATER SETS)...STAND	
16.	3-703-264-12	(EXCEPT US,Canadian)..LABEL, SERIAL NUMBER	
	3-887-286-01	(EXCEPT US,Canadian,AUS) ...LABEL, MODEL NUMBER	
	3-894-572-01	(AEP(EXCEPT DENMARK,FINLAND,NORWAY, FEDERAL REPUBLIC OF GERMANY),AUS,E(EXCEPT MIDDLE EASTS,SAUDI ARABIA))........LABEL, MODEL NUMBER	
	3-894-573-01	(E(MIDDLE EASTS,SAUDI ARABIA),AEP (DENMARK, FINLAND,NORWAY,FEDERAL REPUBLIC OF GERMANY),UK)...LABEL, MODEL NUMBER	
	3-894-574-01	(US,Canadian).........LABEL, MODEL NUMBER	
17	3-894-509-01	HOOK, BELT	
18	7-685-148-19	SCREW +PTP 3X12	
19	3-427-542-00	STOPER	
20	A-3635-189-A	CARD ASSY, MENU	
21	3-894-514-01	TERMINAL (1), MINUS	
22	X-3894-510-1	BATTERY LID ASSY	
23	7-685-154-19	SCREW +P 3X35 TYPE2 NON-SLIT	
24	X-3894-506-1	KNOB ASSY, TUNING	
25	3-701-400-01	(AEP(FINLAND,DENMARK,NORWAY)) ....LABEL, NEMKO	
26	*3-703-929-01	SHEET, KNOB	
27	7-685-147-19	SCREW +BTP 3X10 TYPE2 N-S	
28	3-839-642-01	CUSHION (B)	
29	4-374-714-01	(LATER SETS)...LATCH, STAND	
902	1-501-331-11	ANTENNA, TELESCOPIC	
907	*1-614-275-11	PC BOARD, LED	
910	8-927-179-00	SPEAKER UNIT (100F016)	
914	*A-3684-073-A	MOUNTED PCB, JACK	

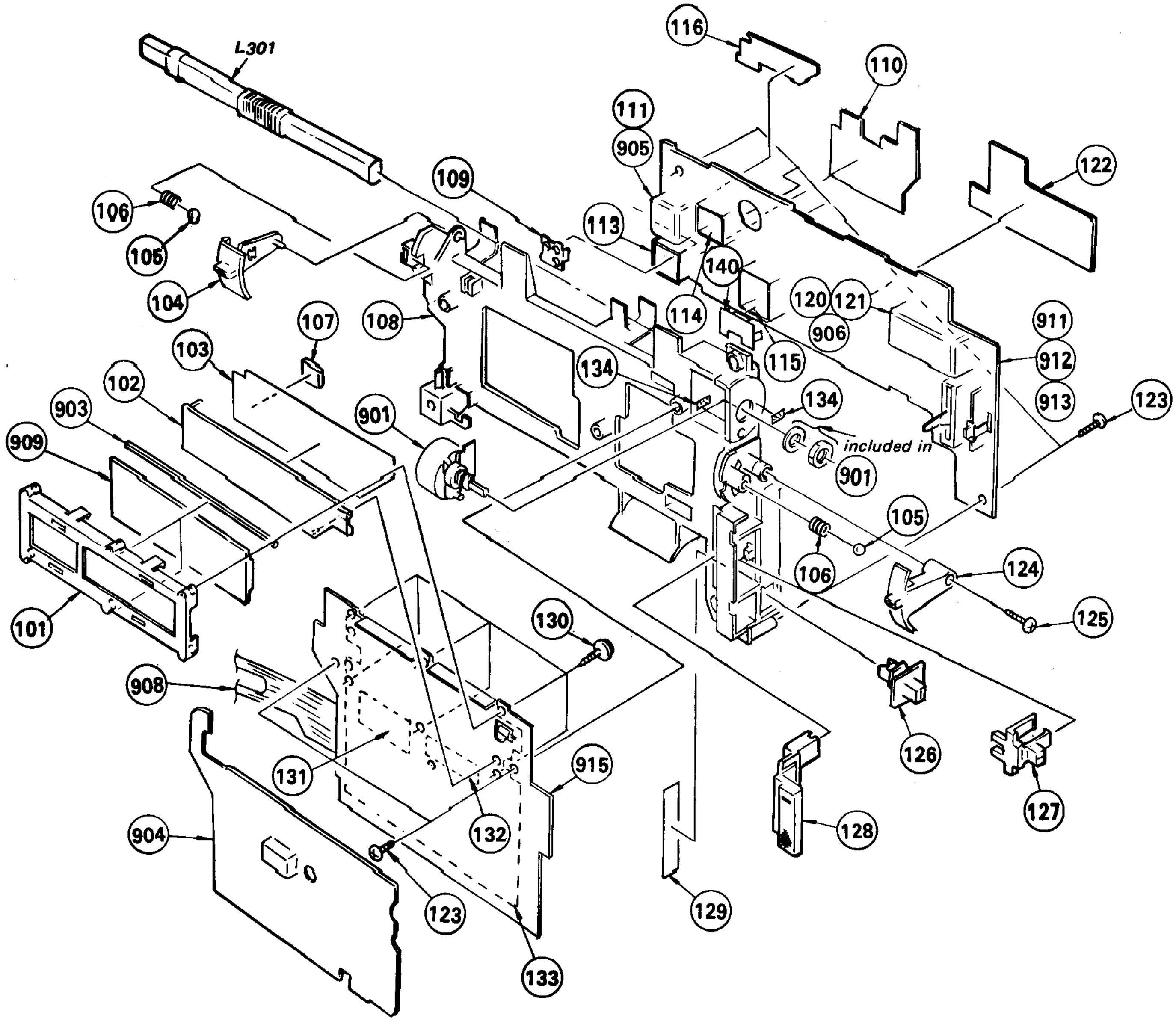
(2)

(3)



No.	Part No.	Description	REMARKS
51	3-703-708-01	STICKER, SONY SYMBOL (18)	
52	3-894-510-11	(EXCEPT E(ASIA))...KNOB, ALC:GRN	
53	3-894-534-01	SASH, ORNAMENTAL	
54	3-894-528-01	HOOK (2), BELT	
55	3-894-510-01	KNOB, ALC:BLK	
56	3-894-530-01	SPRING	
57	7-685-103-21	SCREW +PTP 2X5	
58	3-894-506-01	PIN, BELT	
59	3-894-589-01	BUTTON, LIGHT	
62	7-628-254-15	SCREW +PS 2.6X6	
63	3-894-517-01	SHEET, BUTTON RETAINER	
64	3-894-545-11	BUTTON, 3 KEY (PRESENT TIME)	
65	3-894-545-01	BUTTON, 3 KEY (BATTERY CHECK,ENTER)	
66	*3-894-584-02	COVER, KEY TOP	
67	3-894-529-01	LABEL, POLARITY	
68	3-894-531-01	SPRING	
69	3-894-532-01	PLATE, POLE, BATTERY	
70	3-894-536-41	(E(MIDDLE EASTS))..PLATE, INDICATION, LCD	
	3-894-536-51	(E(SAUDE ARABIA))..PLATE, INDICATION, LCD	
	3-894-536-11	(UK)...............PLATE, INDICATION, LCD	
	3-894-536-21	(AEP(FRANCE))......PLATE, INDICATION, LCD	
	3-894-536-31	(AEP(DENMARK,FINLAND,NORWAY))...PALATE, INDICATION	
	3-894-536-01	(E(EXCEPT MIDDLE EASTS,SAUDI·ARABIA), Canadian,US,AEP)...PLATE, INDICATION, LCD	
71	3-894-535-01	PLATE, TRANSPARENT	
72	3-831-441-XX	CUSHION, STOPPER	
73	9-911-863-XX	(US,Canadian,AEP,AUS,E(EXCEPT SAUDI ARABIA))...SPACER, PUSH BUTTON	
75	*3-894-583-01	LUG, GROUND	
76	3-894-588-01	BUTTON, SLEEP	
77	3-894-590-01	BUTTON, TIMER	
78	3-894-591-01	BUTTON, SHIFT	
79	3-894-594-01	BUTTON, START/STOP	
80	3-894-594-11	BUTTON, SKIP	
81	3-894-598-01	BUTTON, BAND (AIR)	
82	3-894-598-11	BUTTON, BAND (FM)	
83	3-894-598-21	BUTTON, BAND (AM)	
84	3-894-539-02	BUTTON, 32-KEY	
85	3-894-596-01	BUTTON, FIGURE (0)	
86	3-894-596-11	BUTTON, FIGURE (1)	
87	3-894-596-21	BUTTON, FIGURE (2)	
88	3-894-596-31	BUTTON, FIGURE (3)	
89	3-894-596-41	BUTTON, FIGURE (4)	
90	3-894-596-51	BUTTON, FIGURE (5)	
91	3-894-596-61	BUTTON, FIGURE (6)	
92	3-894-596-71	BUTTON, FIGURE (7)	
93	3-894-596-81	BUTTON, FIGURE (8)	
94	3-894-596-91	BUTTON, FIGURE (9)	
95	3-894-595-01	BUTTON, EXECUTE	
99	3-839-640-00	CUSHION	

(3)


L301
116
110
111
905
122
109
106
105
113
140
104
107
108
114
120
121
906
911
912
913
123
103
134
115
102
134
903
901
included in
901
909
105
106
124
101
130
125
908
126
131
915
127
132
128
904
123
129
133

No.	Part No.	Description	REMARKS
101	*3-894-502-01	HOLDER, LCD	
102	3-894-533-01	PLATE, LIGHT GUIDE	
103	3-894-515-01	SHEET, REFLECTION	
104	3-894-538-01	KNOB, POWER	
105	7-671-156-01	BALL, STAINLESS	
106	3-894-526-01	SPRING, COMPRESSION	
107	9-911-815-XX	ABSORBER, VIBRATION (F)	
108	3-894-550-01	CHASSIS	
110	*X-3894-515-1	PLATE (N) ASSY, SHIELD	
111	*3-891-832-01	CASE (A), SHIELD	
113	*3-894-521-01	PLATE (D), SHIELD	
114	*3-894-520-01	PLATE (C), SHIELD	
115	*3-894-518-01	PLATE (A), SHIELD	
116	*X-3894-507-1	PLATE (L) ASSY, SHIELD	
120	*3-894-519-01	PLATE (B), SHIELD	
121	*3-894-580-01	SHEET (B), INSULATING	
122	*X-3894-508-1	PLATE (K) ASSY, SHIELD	
123	7-685-146-19	SCREW +BTP 3X8 TYPE2 N-S	
124	3-894-537-01	KNOB, S.F.L	
125	7-685-546-19	SCREW +BTP 3X8	
126	3-894-505-01	KNOB, SELECTOR	
127	3-894-543-01	KNOB, TONE	
128	3-894-507-01	CONTROL, SLIDE	
129	3-894-585-01	SHEET, CONTROL	
130	7-687-204-21	TOTSU PTPWH 2X6 NON-SLIT, TYPE2	
131	*X-3894-504-1	PLATE (H) ASSY, SHIELD	
132	*X-3894-503-1	PLATE (G) ASSY, SHIELD	
133	*X-3894-505-1	PLATE (J) ASSY, SHIELD	
134	3-894-593-01	SHEET, KNOB	
901	1-464-406-11	ENCODER, ROTARY	
903	1-535-550-11	CONDUCTOR, CONNECTOR	
904	1-570-071-11	SWITCH, RUBBER KEY	
905	*1-614-273-11	PC BOARD, DD CONVERTER	
906	*1-614-274-11	PC BOARD, SYNC	
908	1-614-279-11	PC BOARD, FLEXIBLE	
909	1-807-009-11	DISPLAY PANEL, LIQUID CRYSTAL	
911	A-3660-544-A	(E(EXCEPT MIDDLE EASTS SAUDI ARABIA),AEP (EXCEPT FEDERAL REPUBLIC OF GERMANY,NORWAY, DENMARK,FINLAND),AUS)....MOUNTED PCB, MAIN	
912	A-3660-557-A	(E(MIDDLE EASTS,SAUDI ARABIA),AEP(NORWAY, FINLAND,DENMARK),UK)...MOUNTED PCB MAIN	
913	*A-3660-559-A	(US,Canadian)...MOUNTED PCB, MAIN	
915	*A-3689-056-A	PC BOARD ASSY, KEY	
140	*3-895-102-01	《AEP FEDERAL REPUBLIC OF GERMANY》...CASE (Z), SHIELD	

NOTE:

- Items marked " ★ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- If there are two or more same circuitsin a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

CAPACITORS:
MF:μF, PF:μμF.

RESISTORS
- All resistors are in ohms.
- F : nonflammable

COILS
- MMH : mH, UH : μH

SEMICONDUCTORS
In each case, U : μ, for example:
UA...: μA..., UPA...: μPA..., UPC...: μPC, UPD...: μPD...

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une trame et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
901	1-464-406-11	ENCODER, ROTARY			
902	1-501-331-11	ANTENNA, TELESCOPIC			
903	1-535-550-11	CONDUCTOR, CONNECTOR			
904	1-570-071-11	SWITCH, RUBBER KEY			
905	*1-614-273-11	PC BOARD, DD CONVERTER			
906	*1-614-274-11	PC BOARD, SYNC			
907	*1-614-275-11	PC BOARD, LED			
908	1-614-279-11	PC BOARD, FLEXIBLE			
909	1-807-009-11	DISPLAY PANEL, LIQUID CRYSTAL			
910	8-927-179-00	SPEAKER UNIT (100F016)			
911	A-3660-544-A	(E(EXCEPT MIDDLE EASTS SAUDI ARABIA), AEP(EXCEPT FEDERAL REPUBLIC OF GERMANY,NORWAY, DENMARK,FINLAND),AUS)....MOUNTED PCB, MAIN			
912	A-3660-557-A	(E(MIDDLE EASTS, SAUDI ARABIA), AEP(NORWAY,FINLAND,DENMARK),UK)...MOUNTED PCB MAIN			
913	*A-3660-559-A	(US,Canadian)...MOUNTED PCB, MAIN			
914	*A-3684-073-A	MOUNTED PCB, JACK			
915	*A-3689-056-A	PC BOARD ASSY, KEY			
BPF1	1-235-402-11	(US,Canadian,E(EXCEPT MIDDLE EASTS,SAUDI ARABIA),AEP(EXCEPT DENMARK,FINLAND,NORWAY,FEDERAL REPUBLIC OF GERMANY),AUS)...FILTER, BAND PASS			
C2	1-163-179-00	CERAMIC	82PF	10%	50V
C3	1-163-177-00	CERAMIC	68PF	5%	50V
C5	1-162-331-00	CERAMIC	6.8PF	10%	50V
C4	1-162-331-00	CERAMIC	6.8PF	10%	50V
C6	1-163-205-00	CERAMIC	0.001MF	10%	50V
C7	1-162-325-00	CERAMIC	2.2PF	10%	50V
C8	1-163-059-00	CERAMIC	0.01MF	20%	16V
C9	1-163-205-00	CERAMIC	0.001MF	10%	50V
C10	1-163-205-00	CERAMIC	0.001MF	10%	50V
C11	1-163-059-00	CERAMIC	0.01MF	20%	16V
C12	1-163-159-00	CERAMIC	12PF	5%	50V
C13	1-162-330-00	CERAMIC	5.6PF	10%	50V
C14	1-123-612-00	ELECT	2.2MF	20%	50V
C15	1-163-059-00	CERAMIC	0.01MF	20%	16V
C16	1-163-059-00	CERAMIC	0.01MF	20%	16V
C17	1-163-059-00	CERAMIC	0.01MF	20%	16V
C18	1-163-172-00	CERAMIC	43PF	5%	50V
C19	1-123-618-00	ELECT	22MF	20%	6.3V
C20	1-163-059-00	CERAMIC	0.01MF	20%	16V
C21	1-163-059-00	CERAMIC	0.01MF	20%	16V
C22	1-163-059-00	CERAMIC	0.01MF	20%	16V
C23	1-162-180-00	CERAMIC	0.47MF		50V
C24	1-131-383-00	TANTALUM	10MF	20%	6.3V
C25	1-163-059-00	CERAMIC	0.01MF	20%	16V
C26	1-163-059-00	CERAMIC	0.01MF	20%	16V

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
C27	1-163-059-00	CERAMIC	0.01MF	20%	16V
C28	1-163-059-00	CERAMIC	0.01MF	20%	16V
C29	1-163-059-00	CERAMIC	0.01MF	20%	16V
C30	1-163-059-00	CERAMIC	0.01MF	20%	16V
C31	1-123-617-00	ELECT	10MF	20%	16V
C33	1-163-059-00	CERAMIC	0.01MF	20%	16V
C34	1-163-059-00	CERAMIC	0.01MF	20%	16V
C35	1-163-181-00	CERAMIC	100PF	10%	50V
C36	1-123-647-00	ELECT	47MF	20%	6.3V
C38	1-163-059-00	CERAMIC	0.01MF	20%	16V
C39	1-163-165-00	CERAMIC	22PF	5%	50V
C40	1-123-617-00	ELECT	10MF	20%	16V
C41	1-163-161-00	CERAMIC	15PF	5%	50V
C42	1-163-059-00	CERAMIC	0.01MF	20%	16V
C44	1-163-059-00	CERAMIC	0.01MF	20%	16V
C45	1-123-611-00	ELECT	1MF	20%	50V
C46	1-163-205-00	CERAMIC	0.001MF	10%	50V
C47	1-131-402-00	TANTALUM	0.1MF	20%	35V
C48	1-123-611-00	ELECT	1MF	20%	50V
C49	1-163-059-00	CERAMIC	0.01MF	20%	16V
C50	1-163-165-00	CERAMIC	22PF	5%	50V
C51	1-163-151-00	CERAMIC	3.9PF	10%	50V
C52	1-163-205-00	CERAMIC	0.001MF	10%	50V
C53	1-163-205-00	CERAMIC	0.001MF	10%	50V
C54	1-163-161-00	CERAMIC	15PF	5%	50V
C55	1-163-059-00	CERAMIC	0.01MF	20%	16V
C56	1-163-205-00	CERAMIC	0.001MF	10%	50V
C57	1-163-059-00	CERAMIC	0.01MF	20%	16V
C58	1-163-205-00	CERAMIC	0.001MF	10%	50V
C59	1-163-059-00	CERAMIC	0.01MF	20%	16V
C60	1-163-055-00	CERAMIC	0.0047MF	30%	16V
C61	1-163-147-00	CERAMIC	1PF	20%	50V
C62	1-163-205-00	CERAMIC	0.001MF	10%	50V
C63	1-163-059-00	CERAMIC	0.01MF	20%	16V
C64	1-162-325-00	CERAMIC	2.2PF	10%	50V
C65	1-163-147-00	CERAMIC	1PF	20%	50V
C66	1-163-059-00	CERAMIC	0.01MF	20%	16V
C67	1-102-973-00	CERAMIC	100PF	5%	50V
C68	1-124-442-00	ELECT	330MF	20%	6.3V
C70	1-163-059-00	CERAMIC	0.01MF	20%	16V
C71	1-163-059-00	CERAMIC	0.01MF	20%	16V
C72	1-123-616-00	ELECT	4.7MF	20%	25V
C73	1-163-059-00	CERAMIC	0.01MF	20%	16V
C74	1-163-059-00	CERAMIC	0.01MF	20%	16V
C75	1-131-412-00	TANTALUM	0.47MF	20%	20V

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
C76	1-123-610-00	ELECT	0.47MF	20%	50V
C77	1-123-610-00	ELECT	0.47MF	20%	50V
C78	1-123-610-00	ELECT	0.47MF	20%	50V
C79	1-131-402-00	TANTALUM	0.1MF	20%	35V
C80	1-163-059-00	CERAMIC	0.01MF	20%	16V
C81	1-163-059-00	CERAMIC	0.01MF	20%	16V
C82	1-123-616-00	ELECT	4.7MF	20%	25V
C83	1-163-209-00	CERAMIC	0.0015MF	30%	16V
C84	1-123-616-00	ELECT	4.7MF	20%	25V
C85	1-163-059-00	CERAMIC	0.01MF	20%	16V
C86	1-163-059-00	CERAMIC	0.01MF	20%	16V
C87	1-123-611-00	ELECT	1MF	20%	50V
C88	1-123-610-00	ELECT	0.47MF	20%	50V
C89	1-123-617-00	ELECT	10MF	20%	16V
C90	1-123-607-00	ELECT	0.1MF	20%	50V
C91	1-163-059-00	CERAMIC	0.01MF	20%	16V
C92	1-163-059-00	CERAMIC	0.01MF	20%	16V
C93	1-131-401-00	TANTALUM	0.068MF	20%	35V
C94	1-163-205-00	CERAMIC	0.001MF	10%	50V
C95	1-123-611-00	ELECT	1MF	20%	50V
C96	1-163-169-00	CERAMIC	33PF	5%	50V
C97	1-163-173-00	CERAMIC	47PF	5%	50V
C98	1-162-180-00	CERAMIC	0.47MF		50V
C99	1-123-661-00	ELECT	100MF	20%	6.3V
C100	1-123-647-00	ELECT	47MF	20%	6.3V
C101	1-163-059-00	CERAMIC	0.01MF	20%	16V
C102	1-123-646-00	ELECT	33MF	20%	6.3V
C103	1-123-616-00	ELECT	4.7MF	20%	25V
C104	1-163-163-00	CERAMIC	18PF	5%	50V
C105	1-163-059-00	CERAMIC	0.01MF	20%	16V
C106	1-123-617-00	ELECT	10MF	20%	16V
C107	1-163-059-00	CERAMIC	0.01MF	20%	16V
C108	1-163-161-00	CERAMIC	15PF	5%	50V
C109	1-163-169-00	CERAMIC	33PF	5%	50V
C110	1-163-157-00	CERAMIC	10PF	5%	50V
C111	1-163-059-00	CERAMIC	0.01MF	20%	16V
*1C112	1-130-834-00	FILM	1MF	10%	63V
C113	1-163-059-00	CERAMIC	0.01MF	20%	16V
C114	1-163-159-00	CERAMIC	12PF	5%	50V
C115	1-163-147-00	CERAMIC	1PF	20%	50V
C116	1-123-661-00	ELECT	100MF	20%	6.3V
C117	1-163-059-00	CERAMIC	0.01MF	20%	16V
C118	1-163-059-00	CERAMIC	0.01MF	20%	16V
C119	1-163-147-00	CERAMIC	1PF	20%	50V
C120	1-163-059-00	CERAMIC	0.01MF	20%	16V

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
C121	1-163-059-00	CERAMIC	0.01MF	20%	16V
C122	1-123-617-00	ELECT	10MF	20%	16V
C123	1-163-059-00	CERAMIC	0.01MF	20%	16V
C124	1-163-059-00	CERAMIC	0.01MF	30%	16V
C125	1-163-059-00	CERAMIC	0.01MF	20%	16V
C126	1-163-205-00	CERAMIC	0.001MF	10%	50V
C127	1-163-059-00	CERAMIC	0.01MF	20%	16V
C128	1-163-166-00	CERAMIC	24PF	5%	50V
C129	1-163-059-00	CERAMIC	0.01MF	20%	16V
C130	1-163-205-00	CERAMIC	0.001MF	10%	50V
C131	1-162-331-00	CERAMIC	6.8PF	10%	50V
C132	1-163-167-00	CERAMIC	27PF	5%	50V
C133	1-163-166-00	CERAMIC	24PF	5%	50V
C134	1-102-074-00	CERAMIC	0.001MF	10%	50V
C135	1-123-617-00	ELECT	10MF	20%	16V
C136	1-163-059-00	CERAMIC	0.01MF	20%	16V
C137	1-163-059-00	CERAMIC	0.01MF	20%	16V
*1C138	1-130-833-00	FILM	0.82MF	10%	63V
C139	1-124-442-00	ELECT	330MF	20%	6.3V
C140	1-162-325-00	CERAMIC	2.2PF	10%	50V
C141	1-163-059-00	CERAMIC	0.01MF	20%	16V
C142	1-163-059-00	CERAMIC	0.01MF	20%	16V
C143	1-163-147-00	CERAMIC	1PF	20%	50V
C144	1-163-147-00	CERAMIC	1PF	20%	50V
C145	1-163-173-00	CERAMIC	47PF	5%	50V
C146	1-163-205-00	CERAMIC	0.001MF	10%	50V
C147	1-163-059-00	CERAMIC	0.01MF	20%	16V
C148	1-163-173-00	CERAMIC	47PF	5%	50V
C149	1-163-205-00	CERAMIC	0.001MF	10%	50V
C150	1-163-059-00	CERAMIC	0.01MF	20%	16V
C151	1-163-205-00	CERAMIC	0.001MF	10%	50V
C152	1-163-059-00	CERAMIC	0.01MF	20%	16V
C153	1-163-175-00	CERAMIC	56PF	5%	50V
C154	1-163-173-00	CERAMIC	47PF	5%	50V
C155	1-163-177-00	CERAMIC	68PF	5%	50V
C156	1-123-661-00	ELECT	100MF	20%	6.3V
C157	1-102-108-00	CERAMIC	150PF	20%	50V
C158	1-163-169-00	CERAMIC	33PF	5%	50V
C159	1-123-661-00	ELECT	100MF	20%	6.3V
C160	1-124-470-11	ELECT	470MF	20%	6.3V
C161	1-121-805-00	ELECT	330MF	20%	10V
C162	1-124-442-00	ELECT	330MF	20%	6.3V
C163	1-162-180-00	CERAMIC	0.47MF		50V
C164	1-124-444-11	ELECT	220MF	20%	6.3V
C165	1-163-157-00	CERAMIC	10PF	5%	50V

*1 See page 86, since the capacities are different by the replacement IC of IC4 and IC6.

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
C166	1-162-325-00	CERAMIC	2.2PF	10%	50V
C167	1-161-013-00	CERAMIC	0.01MF	10%	25V
C168	1-161-013-00	CERAMIC	0.01MF	10%	25V
C169	1-162-430-11	CERAMIC	180PF	10%	50V
C170	1-163-059-00	CERAMIC	0.01MF	20%	16V
C171	1-163-059-00	CERAMIC	0.01MF	20%	16V
C172	1-163-059-00	CERAMIC	0.01MF	20%	16V
C173	1-163-177-00	CERAMIC	68PF	5%	50V
C174	1-163-177-00	CERAMIC	68PF	5%	50V
C175	1-162-392-00	CERAMIC	150PF	10%	50V
C176	1-162-392-00	CERAMIC	150PF	10%	50V
C301	1-124-470-11	ELECT	470MF	20%	6.3V
C302	1-163-059-00	CERAMIC	0.01MF	20%	16V
C303	1-163-059-00	CERAMIC	0.01MF	20%	16V
C304	1-163-181-00	CERAMIC	100PF	10%	50V
C305	1-123-611-00	ELECT	1MF	20%	50V
C306	1-123-617-00	ELECT	10MF	20%	16V
C307	1-163-175-00	CERAMIC	56PF	5%	50V
C308	1-163-176-00	CERAMIC	62PF	5%	50V
C309	1-163-189-00	CERAMIC	220PF	10%	50V
C310	1-162-434-11	CERAMIC	820PF	10%	50V
C311	1-123-617-00	ELECT	10MF	20%	16V
C312	1-123-618-00	ELECT	22MF	20%	6.3V
C314	1-162-392-00	CERAMIC	150PF	10%	50V
C401	1-123-617-00	ELECT	10MF	20%	16V
C402	1-131-383-00	TANTALUM	10MF	10%	6.3V
C501	1-135-099-00	TANTAL. CHIP	2.2MF	20%	6.3V
C502	1-135-099-00	TANTAL. CHIP	2.2MF	20%	6.3V
C503	1-135-099-00	TANTAL. CHIP	2.2MF	20%	6.3V
C504	1-135-100-21	TANTAL. CHIP	6.8MF	20%	6.3V
C505	1-163-059-00	CERAMIC	0.01MF	20%	16V
C506	1-163-059-00	CERAMIC	0.01MF	20%	16V
C507	1-163-059-00	CERAMIC	0.01MF	20%	16V
C508	1-163-059-00	CERAMIC	0.01MF	20%	16V
C509	1-163-169-00	CERAMIC	33PF	5%	50V
C510	1-163-169-00	CERAMIC	33PF	5%	50V
C511	1-135-105-00	TANTAL. CHIP	33MF	20%	4V
C512	1-163-059-00	CERAMIC	0.01MF	20%	16V
C513	1-163-059-00	CERAMIC	0.01MF	20%	16V
C514	1-163-167-00	CERAMIC	27PF	5%	50V
C515	1-162-330-00	CERAMIC	5.6PF	5%	50V
C516	1-135-104-00	TANTAL. CHIP	10MF	20%	4V
C517	1-163-059-00	CERAMIC	0.01MF	20%	16V
C518	1-163-059-00	CERAMIC	0.01MF	20%	16V
C520	1-163-059-00	CERAMIC	0.01MF	20%	16V
C601	1-163-059-00	CERAMIC	0.01MF	20%	16V
C602	1-163-177-00	CERAMIC	68PF	5%	50V
C603	1-163-059-00	CERAMIC	0.01MF	20%	16V

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
C604	1-163-177-00	CERAMIC	68PF	5%	50V
C605	1-123-646-00	ELECT	33MF	20%	6.3V
C606	1-163-059-00	CERAMIC	0.01MF	20%	16V
C607	1-163-059-00	CERAMIC	0.01MF	20%	16V
C608	1-131-418-00	TANTALUM	1MF	20%	10V
C609	1-163-213-00	CERAMIC	0.0022MF	20%	16V
C610	1-163-213-00	CERAMIC	0.0022MF	20%	16V
C611	1-131-423-00	TANTALUM	6.8MF	20%	6.3V
C612	1-163-205-00	CERAMIC	1000PF	10%	50V
C613	1-131-400-00	TANTALUM	0.047MF	20%	35V
C614	1-131-418-00	TANTALUM	1MF	20%	10V
C615	1-123-646-00	ELECT	33MF	20%	6.3V
C616	1-163-059-00	CERAMIC	0.01MF	20%	16V
C617	1-163-193-00	CERAMIC	330PF	10%	50V
C618	1-163-193-00	CERAMIC	330PF	10%	50V
C619	1-163-059-00	CERAMIC	0.01MF	20%	16V
C620	1-102-942-00	(SELECTED TO MATCH X601)... CERAMIC	5PF	0.5PF	50V
C620	1-102-951-00	(SELECTED TO MATCH X601)... CERAMIC	15PF	0.5PF	50V
C621	1-161-039-00	CERAMIC	0.001MF	10%	25V
C622	1-163-059-00	CERAMIC	0.01MF	30%	16V
C701	1-163-172-00	CERAMIC	43PF	5%	50V
C702	1-123-618-00	ELECT	22MF	20%	6.3V
C703	1-123-622-00	ELECT	22MF	20%	16V
C704	1-162-179-11	CERAMIC	0.1MF		50V
CF1	1-527-795-71	FILTER, CERAMIC			
CF2	1-527-795-71	FILTER, CERAMIC			
CFW1	1-527-392-00	FILTER, CERAMIC			
CFW2	1-527-569-00	FILTER, CERAMIC			
CNJ1	*1-562-659-11	SOCKET, CONNECTOR 9P			
CNJ2	1-562-660-11	SOCKET, CONNECTOR 13P			
CNP601	*1-560-531-00	PIN, CONNECTOR 5P			
CNP602	*1-508-980-11	PIN, CONNECTOR			
CNP701	*1-560-666-00	PIN, CONNECTOR 3P			
CT1	1-141-272-00	(US,Canadian,E(EXCEPT MIDDLE EASTS, SAUDI ARABIA),AEP(EXCEPT DENMARK,FINLAND,NORWAY, FEDERAL REPUBLIC OF GERMANY))....CAP, TRIMMER			
CT2	1-141-229-00	CAP, TRIMMER			
CT3	1-141-229-00	CAP, TRIMMER			
CT4	1-141-227-00	TRIMMER, CERAMIC			
CT5	1-141-229-00	CAP, TRIMMER			
CT6	1-141-272-00	CAP, TRIMMER			
CT7	1-141-229-00	CAP, TRIMMER			
CT501	1-141-296-21	CAP, TRIMMER			
CT601	1-141-318-11	CAP, TRIMMER			

ELECTRICAL PARTS

Ref.No.	Part No.	Description
D1	8-719-104-15	(EXCEPT E(MIDDLE EASTS,SAUDI ARABIA),UK ,AEP(DENMARK,FINLAND,NORWAY,FEDERAL PEPUBLIC OF GERMANY))...DIODE 1T26N
D2	8-719-911-19	DIODE 1SS119
D3	8-719-911-19	DIODE 1SS119
D4	8-719-903-27	DIODE 1SS168
D5	8-719-903-27	DIODE 1SS168
D6	8-719-911-19	DIODE 1SS119
D7	8-719-911-19	DIODE 1SS119
D9	8-719-911-06	DIODE 1SS106
D10	8-719-911-06	DIODE 1SS106
D11	8-719-911-06	DIODE 1SS106
D12	8-719-911-06	DIODE 1SS106
D14	8-719-915-36	DIODE SLP145B
D15	8-719-104-15	DIODE 1T26N
D16	8-713-300-00	(EXCEPT E(MIDDLE EASTS,SAUDI ARABIA),UK ,AEP(DENMARK,FINLAND,NORWAY,FEDERAL REPUBLIC OF GERMANY))....DIODE 1T33
D17	8-719-104-15	(EXCEPT E(MIDDLE EASTS,SAUDI ARABIA),UK ,AEP(DENMARK,FINLAND,NORWAY,FEDERAL REPUBLIC OF GERMANY))...DIODE 1T26N
D18	8-713-300-00	DIODE 1T33
D19	8-713-300-00	DIODE 1T33
D20	8-719-911-19	DIODE 1SS119
D21	8-719-911-19	DIODE 1SS119
D22	8-719-911-19	DIODE 1SS119
D25	8-719-911-19	DIODE 1SS119
D26	8-719-911-19	DIODE 1SS119
D27	8-713-300-00	DIODE 1T33
D28	8-713-300-00	DIODE 1T33
D29	8-713-300-00	DIODE 1T33
D30	8-713-300-00	DIODE 1T33
D31	8-719-911-19	DIODE 1SS119
D32	8-719-911-19	DIODE 1SS119
D33	8-719-911-19	DIODE 1SS119
D34	8-719-911-19	DIODE 1SS119
D35	8-719-911-19	DIODE 1SS119
D36	8-719-911-19	DIODE 1SS119
D301	8-719-911-19	DIODE 1SS119
D302	8-719-911-19	DIODE 1SS119
D303	8-719-104-15	DIODE 1T26N
D304	8-719-000-12	DIODE MC931
D305	8-719-000-12	DIODE MC931
D401	8-719-800-54	DIODE TLUR-122
D402	8-719-800-54	DIODE TLUR-122
D403	8-719-800-54	DIODE TLUR-122
D404	8-719-800-54	DIODE TLUR-122

ELECTRICAL PARTS

Ref.No.	Part No.	Description
D405	8-719-800-54	DIODE TLUR-122
D406	8-719-800-54	DIODE TLUR-122
D407	8-719-800-54	DIODE TLUR-122
D408	8-719-800-54	DIODE TLUR-122
D409	8-719-800-54	DIODE TLUR-122
D410	8-719-800-54	DIODE TLUR-122
D411	8-719-800-54	DIODE TLUR-122
D412	8-719-800-54	DIODE TLUR-122
D501	8-719-915-35	DIODE SLP236F-50U
D503	8-719-100-03	DIODE 1S2835
D504	8-719-100-03	DIODE 1S2835
D505	8-719-100-03	DIODE 1S2835
D506	8-719-100-03	DIODE 1S2835
D507	8-719-100-03	DIODE 1S2835
D508	8-719-100-03	DIODE 1S2835
D509	8-719-100-03	DIODE 1S2835
D510	8-719-100-03	DIODE 1S2835
D511	8-719-100-03	DIODE 1S2835
D512	8-719-100-03	DIODE 1S2835
D513	8-719-100-03	DIODE 1S2835
D514	8-719-100-03	DIODE 1S2835
D515	8-719-100-03	DIODE 1S2835
D516	8-719-101-23	DIODE 1SS123
D518	8-719-100-03	DIODE 1S2835
D519	8-719-100-03	DIODE 1S2835
D601	8-713-300-00	DIODE 1T33
D602	8-719-911-19	DIODE 1SS119
D701	8-719-910-26	DIODE HZ12B3L
D702	8-719-911-19	DIODE 1SS119
IC1	8-759-801-14	IC LA1205
IC2	8-759-103-93	IC UPC393C
IC3	8-759-103-93	IC UPC393C
*2IC4	8-759-961-10	IC CX-7961A
IC5	8-759-110-37	IC UPC1037H
*2IC6	8-759-961-10	IC CX-7961A
IC7	8-759-110-37	IC UPC1037H
IC9	8-759-800-27	IC LA5003
IC10	8-759-340-66	IC HD14066BP
IC11	8-759-340-69	IC HD14069UBP
IC12	8-759-340-01	IC HD14001BP
IC13	8-759-340-01	IC HD14001BP
IC14	8-759-340-11	IC HD14011BP
IC15	8-759-340-11	IC HD14011BP
IC16	8-759-340-11	IC HD14011BP
IC17	8-759-800-97	IC LA4146
IC401	8-759-800-82	IC LB1411
IC501	8-759-102-02	IC UPD7503G-124

*2 Be sure to see Note on service on page 86 (back cover), when replacing IC4 and/or IC6.

ELECTRICAL PARTS

Ref.No.	Part No.	Description
IC502	8-759-102-03	IC UPD7503G-187
IC503	8-759-145-32	IC UPD4532BC
IC504	8-759-240-13	IC TC4013BP
IC505	8-759-300-99	IC HD14071BFP
IC506	8-759-300-73	IC HD14081BFP
IC507	8-759-300-69	IC HD14001BFP
IC601	8-759-907-69	IC CX-857
IFT A1	1-404-602-11	TRANSFORMER, IFT
IFT A2	1-404-191-00	TRANSFORMER, IF
IFT A3	1-404-362-00	TRANSFORMER, IF
IFT A4	1-404-127-00	IFT (SMALL TYPE)
IFT F1	1-404-126-00	IFT (SMALL TYPE)
J301	1-507-973-11	JACK (AM EXT ANT)
J302	1-507-974-11	JACK (AIR/FM EXT ANT OR FM EXT ANT)
J303	1-507-853-13	JACK (EARPHONE)
J304	1-507-527-00	JACK (EARPHONE)
J305	1-507-954-11	JACK, EXTERNAL POWER
L1	1-408-902-21	MICRO INDUCTOR 0,47UH
L2	1-408-551-00	MICRO INDUCTOR 1UH
L3	1-408-553-00	MICRO INDUCTOR 1.5UH
L4	1-410-001-11	MICRO INDUCTOR 0.22UH
L5	1-426-158-00	COIL (RF)
L6	1-426-158-00	COIL (RF)
L7	1-425-613-00	COIL,AIR-CORE,QF TYPE
L8	1-408-569-00	MICRO INDUCTOR 33UH
L9	1-404-624-11	TRANSFORMER, IF
L10	1-459-573-11	(US,Canadian,E(EXCEPT MIDDLE EASTS, SAUDI ARABIA),AEP(EXCEPT DENMARK,FINLAND,NORWAY, FEDERAL REPUBLIC OF GERMANY),AUS)...COIL (WITH CORE)
L11	1-459-571-11	COIL (WITH CORE)
L12	1-407-882-00	COIL
L13	1-422-201-11	COIL
L14	1-422-200-11	COIL
L15	1-410-191-51	INDUCTOR CHIP 0.82UH
L16	1-410-188-51	INDUCTOR CHIP 0.47UH
L17	1-408-575-00	MICRO INDUCTOR 100UH
L18	1-422-199-11	COIL
L19	1-408-554-00	MICRO INDUCTOR 1.8UH
L20	1-410-202-11	INDUCTOR CHIP 6.8UH
L21	1-408-551-00	MICRO INDUCTOR 1UH
L22	1-408-903-11	MICRO INDUCTOR 0.39UH
L23	1-425-613-00	COIL, AIR-CORE, QF TYPE
L25	1-410-181-51	(US,Canadian,E(EXCEPT MIDDLE EASTS,SAUDI ARABIA),AEP(EXCEPT DENMARK,FINLAND,NORWAY,FEDERAL REPUBLIC OF GERMANY),AUS)...INDUCTOR CHIP 0.12UH

ELECTRICAL PARTS

Ref.No.	Part No.	Description
L26	1-410-181-51	(US,Canadian,E(EXCEPT MIDDLE EASTS,SAUDI ARABIA),AEP(EXCEPT DENMARK,FINLAND,NORWAY,FEDERAL REPUBLIC OF GERMANY),AUS)...INDUCTOR CHIP 0.12UH
L27	1-410-191-51	(US,Canadian,E(EXCEPT MIDDLE EASTS,SAUDI ARABIA),AEP(EXCEPT DENMARK,FINLAND,NORWAY,FEDERAL REPUBLIC OF GERMANY),AUS)...INDUCTOR CHIP 0.82UH
L29	1-410-191-51	(US,Canadian,E(EXCEPT MIDDLE EASTS,SAUDI ARABIA),AEP(EXCEPT DENMARK,FINLAND,NORWAY,FEDERAL REPUBLIC OF GERMANY),AUS)...INDUCTOR CHIP 0.82UH
L301	1-402-139-11	ANTENNA, FERRITE-ROD (LW)
L302	1-408-575-00	MICRO INDUCTOR 100UH
L303	1-408-578-00	MICRO INDUCTOR 180UH
L304	1-408-900-11	MICRO INDUCTOR 0.82UH
L305	1-408-565-00	MICRO INDUCTOR 15UH
L306	1-408-579-31	MICRO INDUCTOR 220UH
L307	1-408-567-00	MICRO INDUCTOR 22UH
L308	1-408-801-11	MICRO INDUCTOR 0.22UH
L601	1-408-575-00	MICRO INDUCTOR 100UH
L701	1-408-575-00	MICRO INDUCTOR 100UH
L702	1-408-575-00	MICRO INDUCTOR 100UH
MCF1	1-527-372-00	FILTER, CRYSTAL
MCF2	1-527-372-00	FILTER, CRYSTAL
PSN	1-464-407-11	CIRCUIT UNIT, 2CH AMPLIFIER
Q1	8-729-800-42	TRANSISTOR 2SK152
Q2	8-729-800-42	TRANSISTOR 2SK152
Q3	8-729-119-32	TRANSISTOR 2SK193
Q4	8-729-178-54	TRANSISTOR 2SC2785
Q5	8-729-115-30	TRANSISTOR 2SK105A-30
Q6	8-729-178-54	TRANSISTOR 2SC2785
Q8	8-729-900-90	TRANSISTOR DTC144ES
Q9	8-729-178-54	TRANSISTOR 2SC2785
Q10	8-729-178-54	TRANSISTOR 2SC2785
Q11	8-729-301-27	(US,Canadian,E(EXCEPT MIDDLE EASTS,SAUDI ARABIA),AEP(EXCEPT DENMARK,FINLAND,NORWAY,FEDERAL REPUBLIC OF GERMANY),AUS)...TRANSISTOR 2SK439D
Q12	8-729-119-32	TRANSISTOR 2SK193
Q13	8-729-178-62	TRANSISTOR 2SC2786-L
Q14	8-729-883-91	TRANSISTOR 2SC2839-D
Q15	8-729-178-54	TRANSISTOR 2SC2785
Q16	8-729-178-54	TRANSISTOR 2SC2785
Q17	8-729-612-77	TRANSISTOR 2SA1027R
Q18	8-729-178-54	TRANSISTOR 2SC2785
Q19	8-729-178-54	TRANSISTOR 2SC2785
Q20	8-729-178-54	TRANSISTOR 2SC2785
Q21	8-729-811-22	TRANSISTOR 2SD1012-2
Q22	8-729-218-42	TRANSISTOR 2SK184
Q23	8-729-178-54	TRANSISTOR 2SC2785

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
Q24	8-729-218-42	TRANSISTOR 2SK184			
Q25	8-729-178-54	TRANSISTOR 2SC2785			
Q26	8-729-200-66	TRANSISTOR 2SK192A			
Q27	8-729-800-83	TRANSISTOR 2SB808			
Q28	8-729-200-66	TRANSISTOR 2SK192A			
Q29	8-729-178-62	TRANSISTOR 2SC2786-L			
Q30	8-729-178-62	TRANSISTOR 2SC2786-L			
Q31	8-729-218-42	TRANSISTOR 2SK184			
Q32	8-729-178-54	TRANSISTOR 2SC2785			
Q33	8-729-200-33	TRANSISTOR 2SK192A			
Q34	8-729-178-62	TRANSISTOR 2SC2786-L			
Q35	8-729-800-00	TRANSISTOR 2SB808			
Q36	8-729-900-90	TRANSISTOR DTC144ES			
Q37	8-729-800-83	TRANSISTOR 2SB808			
Q38	8-729-900-90	TRANSISTOR DTC144ES			
Q39	8-729-800-83	TRANSISTOR 2SB808			
Q40	8-729-801-83	TRANSISTOR 2SB1013			
Q41	8-729-801-83	TRANSISTOR 2SB1013			
Q42	8-729-178-54	TRANSISTOR 2SC2785			
Q43	8-729-178-54	TRANSISTOR 2SC2785			
Q44	8-729-900-90	TRANSISTOR DTC144ES			
Q45	8-729-178-54	TRANSISTOR 2SC2785			
Q46	8-729-181-13	TRANSISTOR 2SB811			
Q47	8-729-178-54	TRANSISTOR 2SC2785			
Q48	8-729-178-54	TRANSISTOR 2SC2785			
Q301	8-729-178-54	TRANSISTOR 2SC2785			
Q302	8-729-800-42	TRANSISTOR 2SK152			
Q303	8-729-800-42	TRANSISTOR 2SK152			
Q304	8-729-800-83	TRANSISTOR 2SB808			
Q305	8-729-178-54	TRANSISTOR 2SC2785			
Q306	8-729-178-54	TRANSISTOR 2SC2785			
Q401	8-729-900-67	TRANSISTOR DTA124XS			
Q501	8-729-100-66	TRANSISTOR 2SC1623			
Q502	8-729-216-22	TRANSISTOR 2SA1162			
Q504	8-729-100-66	TRANSISTOR 2SC1623			
Q601	8-729-900-89	TRANSISTOR DTC144ES			
Q602	8-729-900-89	TRANSISTOR DTC144ES			
Q603	8-729-883-92	TRANSISTOR 2SC2839			
Q701	8-729-178-54	TRANSISTOR 2SC2785			
Q702	8-729-811-22	TRANSISTOR 2SD1012-F2			
R1	1-247-819-00	CARBON MELF	330	5%	1/5W
R2	1-247-843-00	CARBON MELF	3.3K	5%	1/5W
R3	1-247-855-00	CARBON MELF	10K	5%	1/5W
R4	1-247-839-00	CARBON MELF	2.2K	5%	1/5W
R5	1-247-839-00	CARBON MELF	2.2K	5%	1/5W
R6	1-247-867-00	CARBON MELF	33K	5%	1/5W

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
R7	1-247-833-00	CARBON MELF	1.2K	5%	1/5W
R8	1-247-839-00	CARBON MELF	2.2K	5%	1/5W
R9	1-247-807-00	CARBON MELF	100	5%	1/5W
R10	1-247-807-00	CARBON MELF	100	5%	1/5W
R11	1-247-839-00	CARBON MELF	2.2K	5%	1/5W
R12	1-247-791-00	CARBON MELF	22	5%	1/5W
R13	1-247-887-00	CARBON MELF	220K	5%	1/5W
R14	1-247-875-00	CARBON MELF	68K	5%	1/5W
R15	1-247-873-00	CARBON MELF	56K	5%	1/5W
R16	1-247-831-00	CARBON MELF	1K	5%	1/5W
R17	1-247-849-00	CARBON MELF	5.6K	5%	1/5W
R18	1-247-819-00	CARBON MELF	330	5%	1/5W
R19	1-247-851-00	CARBON MELF	6.8K	5%	1/5W
R20	1-247-851-00	CARBON MELF	6.8K	5%	1/5W
R21	1-247-849-00	CARBON MELF	5.6K	5%	1/5W
R22	1-247-841-00	CARBON MELF	2.7K	5%	1/5W
R23	1-247-851-00	CARBON MELF	6.8K	5%	1/5W
R24	1-247-879-00	CARBON MELF	100K	5%	1/5W
R25	1-247-849-00	CARBON MELF	5.6K	5%	1/5W
R26	1-247-841-00	CARBON MELF	2.7K	5%	1/5W
R27	1-247-851-00	CARBON MELF	6.8K	5%	1/5W
R28	1-247-841-00	CARBON	2.7K	5%	1/6W
R29	1-247-855-00	CARBON MELF	10K	5%	1/5W
R30	1-247-863-00	CARBON MELF	22K	5%	1/5W
R31	1-247-791-00	CARBON MELF	22	5%	1/5W
R32	1-247-801-00	CARBON	56	5%	1/6W
R33	1-247-783-00	CARBON MELF	10	5%	1/5W
R34	1-247-807-00	CARBON	100	5%	1/6W
R35	1-247-839-00	CARBON	2.2K	5%	1/5W
R36	1-247-831-00	CARBON MELF	1K	5%	1/5W
R37	1-247-831-00	CARBON MELF	1K	5%	1/5W
R39	1-247-855-00	CARBON MELF	10K	5%	1/5W
R40	1-247-855-00	CARBON MELF	10K	5%	1/5W
R41	1-247-843-00	CARBON MELF	3.3K	5%	1/5W
R42	1-247-825-00	CARBON MELF	560	5%	1/5W
R43	1-247-849-00	CARBON	5.6K	5%	1/6W
R44	1-247-831-00	CARBON	1K	5%	1/6W
R45	1-247-879-00	CARBON MELF	100K	5%	1/5W
R46	1-247-879-00	CARBON MELF	100K	5%	1/5W
R47	1-247-831-00	CARBON MELF	1K	5%	1/5W
R48	1-247-843-00	CARBON MELF	3.3K	5%	1/5W
R49	1-247-831-00	CARBON	1K	5%	1/6W
R50	1-247-827-00	CARBON	680	5%	1/6W
R53	1-247-879-00	CARBON MELF	100K	5%	1/5W
R54	1-247-879-00	CARBON MELF	100K	5%	1/5W

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
R55	1-247-879-00	CARBON MELF	100K	5%	1/5W
R56	1-247-855-00	CARBON MELF	10K	5%	1/5W
R57	1-247-879-00	CARBON MELF	100K	5%	1/5W
R58	1-247-879-00	CARBON MELF	100K	5%	1/5W
R59	1-247-881-00	CARBON MELF	120K	5%	1/5W
R60	1-247-869-00	CARBON MELF	39K	5%	1/5W
R61	1-247-855-00	CARBON MELF	10K	5%	1/5W
R62	1-247-863-00	CARBON MELF	22K	5%	1/5W
R63	1-247-879-00	CARBON MELF	100K	5%	1/5W
R64	1-247-839-00	CARBON MELF	2.2K	5%	1/5W
R65	1-247-839-00	CARBON MELF	2.2K	5%	1/5W
R66	1-247-879-00	CARBON MELF	100K	5%	1/5W
R67	1-247-837-00	CARBON MELF	1.8K	5%	1/5W
R68	1-247-801-00	CARBON MELF	56	5%	1/5W
R69	1-247-795-00	CARBON MELF	33	5%	1/5W
R70	1-247-855-00	CARBON MELF	10K	5%	1/5W
R71	1-247-837-00	CARBON MELF	1.8K	5%	1/5W
R72	1-247-855-00	CARBON MELF	10K	5%	1/5W
R73	1-247-855-00	CARBON MELF	10K	5%	1/5W
R74	1-247-791-00	CARBON MELF	22	5%	1/5W
R75	1-247-831-00	CARBON MELF	1K	5%	1/5W
R76	1-247-881-00	CARBON MELF	120K	5%	1/5W
R77	1-247-839-00	CARBON MELF	2.2K	5%	1/5W
R78	1-247-819-00	CARBON MELF	330	5%	1/5W
R79	1-247-783-00	CARBON MELF	10	5%	1/5W
R81	1-247-819-00	CARBON MELF	330	5%	1/5W
R82	1-247-883-00	CARBON MELF	150K	5%	1/5W
R83	1-247-819-00	CARBON MELF	330	5%	1/5W
R84	1-247-801-00	CARBON MELF	56	5%	1/5W
R90	1-247-831-00	CARBON MELF	1K	5%	1/5W
R91	1-247-815-00	(US,Canadian,E(SAUDI ARABIA,MIDDLE EASTS),UK,AEP(DENMARK,FINLAND,NORWAY) ...CARBON	220	5%	1/5W
R92	1-247-783-00	CARBON MELF	10	5%	1/5W
R93	1-247-855-00	CARBON MELF	10K	5%	1/5W
R94	1-247-855-00	CARBON MELF	10K	5%	1/5W
R95	1-247-843-00	CARBON MELF	3.3K	5%	1/5W
R96	1-247-849-00	CARBON MELF	5.6K	5%	1/5W
R97	1-247-787-00	CARBON MELF	15	5%	1/5W
R98	1-247-903-00	CARBON MELF	1M	5%	1/5W
R99	1-247-903-00	CARBON MELF	1M	5%	1/5W
R100	1-247-855-00	CARBON MELF	10K	5%	1/5W
R101	1-247-835-00	CARBON MELF	1.5K	5%	1/5W
*3R102	1-247-839-00	CARBON MELF	2.2K	5%	1/5W
R103	1-247-843-00	CARBON MELF	3.3K	5%	1/5W

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
R104	1-247-831-00	CARBON MELF	1K	5%	1/5W
R105	1-247-879-00	CARBON MELF	100K	5%	1/5W
R106	1-247-847-00	CARBON MELF	4.7K	5%	1/5W
R107	1-247-855-00	CARBON MELF	10K	5%	1/5W
R108	1-247-847-00	CARBON MELF	4.7K	5%	1/5W
R109	1-247-791-00	CARBON MELF	22	5%	1/5W
R110	1-247-783-00	CARBON MELF	10	5%	1/5W
R111	1-247-879-00	CARBON MELF	100K	5%	1/5W
R112	1-247-849-00	CARBON MELF	5.6K	5%	1/5W
R113	1-247-831-00	CARBON MELF	1K	5%	1/5W
R114	1-247-795-00	CARBON MELF	33	5%	1/5W
R115	1-247-801-00	CARBON MELF	56	5%	1/5W
R116	1-247-883-00	CARBON MELF	150K	5%	1/5W
R117	1-247-825-00	CARBON MELF	560	5%	1/5W
R118	1-247-871-00	CARBON MELF	47K	5%	1/5W
R119	1-247-873-00	CARBON MELF	56K	5%	1/5W
R120	1-247-839-00	CARBON MELF	2.2K	5%	1/5W
R121	1-247-855-00	CARBON MELF	10K	5%	1/5W
R122	1-247-855-00	CARBON MELF	1K	5%	1/5W
R123	1-247-490-00	CARBON MELF	5.6K	5%	1/5W
R124	1-247-839-00	CARBON MELF	2.2K	5%	1/5W
*3R125	1-247-831-00	CARBON MELF	1K	5%	1/5W
R126	1-247-839-00	CARBON MELF	2.2K	5%	1/5W
R127	1-249-041-00	CARBON MELF	2.2K	5%	1/5W
R128	1-247-787-00	CARBON MELF	15	5%	1/5W
R129	1-247-783-00	CARBON MELF	10	5%	1/5W
R130	1-247-855-00	CARBON MELF	10K	5%	1/5W
R131	1-247-831-00	CARBON MELF	1K	5%	1/5W
R132	1-247-839-00	CARBON MELF	2.2K	5%	1/5W
R133	1-247-821-00	CARBON MELF	390	5%	1/5W
R134	1-247-795-00	CARBON MELF	33	5%	1/5W
R135	1-247-827-00	CARBON MELF	680	5%	1/5W
R136	1-247-827-00	CARBON MELF	680	5%	1/5W
R137	1-247-875-00	CARBON MELF	68K	5%	1/5W
R138	1-247-807-00	CARBON	100	5%	1/6W
R139	1-247-783-00	CARBON	10	5%	1/6W
R140	1-247-819-00	CARBON MELF	330	5%	1/5W
R141	1-247-860-00	CARBON MELF	15K	5%	1/5W
R142	1-247-855-00	CARBON MELF	10K	5%	1/5W
R143	1-247-855-00	CARBON MELF	10K	5%	1/5W
R144	1-247-855-00	CARBON MELF	10K	5%	1/5W
R145	1-247-849-00	CARBON MELF	5.6K	5%	1/5W
R146	1-247-831-00	CARBON MELF	1K	5%	1/5W
R147	1-247-831-00	CARBON MELF	1K	5%	1/5W
R148	1-247-843-00	CARBON MELF	3.3K	5%	1/5W

*3 See page 86, since the resistance values are different by the type of IC4 and IC6.

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
R149	1-247-837-00	CARBON MELF	1.8K	5%	1/5W
R150	1-247-867-00	CARBON MELF	33K	5%	1/5W
*3R151	1-247-831-00	CARBON MELF	1K	5%	1/5W
R152	1-247-822-00	CARBON MELF	430	5%	1/5W
R154	1-247-831-00	CARBON MELF	1K	5%	1/5W
R153	1-247-855-00	CARBON MELF	10K	5%	1/5W
R155	1-247-831-00	CARBON MELF	1K	5%	1/5W
R160	1-247-855-00	CARBON MELF	10K	5%	1/5W
R161	1-247-871-00	CARBON MELF	47K	5%	1/5W
R162	1-247-855-00	CARBON MELF	10K	5%	1/5W
R163	1-247-887-00	CARBON MELF	220K	5%	1/5W
R164	1-247-855-00	CARBON MELF	10K	5%	1/5W
R165	1-247-879-00	CARBON MELF	100K	5%	1/5W
R166	1-247-879-00	CARBON MELF	100K	5%	1/5W
R167	1-247-903-00	CARBON MELF	1M	5%	1/5W
R169	1-247-897-00	CARBON MELF	560K	5%	1/5W
R170	1-247-855-00	CARBON MELF	10K	5%	1/5W
R171	1-247-855-00	CARBON MELF	10K	5%	1/5W
R172	1-247-897-00	CARBON MELF	560K	5%	1/5W
R173	1-247-879-00	CARBON MELF	100K	5%	1/5W
R174	1-247-855-00	CARBON MELF	10K	5%	1/5W
R175	1-247-879-00	CARBON MELF	100K	5%	1/5W
R176	1-247-855-00	CARBON MELF	10K	5%	1/5W
R177	1-247-855-00	CARBON MELF	10K	5%	1/5W
R178	1-247-849-00	CARBON MELF	5.6K	5%	1/5W
R179	1-247-867-00	CARBON MELF	33K	5%	1/5W
R180	1-247-867-00	CARBON MELF	33K	5%	1/5W
R181	1-247-825-00	CARBON MELF	560	5%	1/5W
R182	1-247-825-00	CARBON MELF	560	5%	1/5W
R183	1-247-847-00	CARBON MELF	4.7K	5%	1/5W
R184	1-247-847-00	CARBON MELF	4.7K	5%	1/5W
R185	1-247-879-00	CARBON	100K	5%	1/6W
R186	1-247-891-00	CARBON MELF	330K	5%	1/5W
R187	1-247-891-00	CARBON MELF	330K	5%	1/5W
R188	1-247-887-00	CARBON MELF	220K	5%	1/5W
R189	1-247-847-00	CARBON MELF	4.7K	5%	1/5W
R190	1-247-807-00	CARBON MELF	100	5%	1/5W
R191	1-247-863-00	CARBON MELF	22K	5%	1/5W
R192	1-247-855-00	CARBON MELF	10K	5%	1/5W
R193	1-247-887-00	CARBON MELF	220K	5%	1/5W
R194	1-247-855-00	CARBON MELF	10K	5%	1/5W
R195	1-247-847-00	CARBON MELF	4.7K	5%	1/5W
R196	1-247-831-00	CARBON MELF	1K	5%	1/5W
R197	1-247-855-00	CARBON MELF	10K	5%	1/5W
R198	1-247-891-00	CARBON MELF	330K	5%	1/5W
R199	1-247-867-00	CARBON	33K	5%	1/6W

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
R200	1-247-861-00	CARBON MELF	18K	5%	1/5W
R201	1-247-831-00	CARBON MELF	1K	5%	1/5W
R202	1-247-855-00	CARBON MELF	10K	5%	1/5W
R203	1-247-843-00	CARBON MELF	3.3K	5%	1/5W
R204	1-247-843-00	CARBON MELF	3.3K	5%	1/5W
R205	1-247-873-00	CARBON MELF	56K	5%	1/5W
R206	1-247-859-00	CARBON MELF	15K	5%	1/5W
R207	1-247-805-00	CARBON MELF	82	5%	1/5W
R208	1-247-801-00	CARBON MELF	56	5%	1/5W
R209	1-247-849-00	CARBON MELF	5.6K	5%	1/5W
R210	1-247-825-00	CARBON MELF	560	5%	1/5W
R211	1-247-767-00	CARBON MELF	2.2	5%	1/5W
R301	1-247-799-00	CARBON MELF	47	5%	1/5W
R302	1-247-799-00	CARBON MELF	47	5%	1/5W
R303	1-247-791-00	CARBON MELF	22	5%	1/5W
R304	1-247-879-00	CARBON MELF	100K	5%	1/5W
R305	1-247-825-00	CARBON MELF	560	5%	1/5W
R306	1-247-843-00	CARBON MELF	3.3K	5%	1/5W
R307	1-247-839-00	CARBON MELF	2.2K	5%	1/5W
R308	1-247-791-00	CARBON MELF	22	5%	1/5W
R309	1-247-783-00	CARBON MELF	10	5%	1/5W
R310	1-247-795-00	CARBON MELF	33	5%	1/5W
R311	1-247-831-00	CARBON MELF	1K	5%	1/5W
R312	1-247-804-00	CARBON MELF	75	5%	1/5W
R313	1-247-823-00	CARBON MELF	470	5%	1/5W
R314	1-247-879-00	CARBON MELF	100K	5%	1/5W
R315	1-247-783-00	CARBON MELF	10	5%	1/5W
R316	1-247-783-00	CARBON MELF	10	5%	1/5W
R317	1-247-813-00	CARBON MELF	180	5%	1/5W
R318	1-247-855-00	CARBON MELF	10K	5%	1/5W
R319	1-247-803-00	CARBON MELF	68	5%	1/5W
R320	1-247-855-00	CARBON MELF	10K	5%	1/5W
R321	1-247-791-00	CARBON MELF	22	5%	1/5W
R322	1-247-871-00	CARBON	47K	5%	1/6W
R323	1-247-849-00	CARBON	5.6K	5%	1/6W
R324	1-247-863-00	CARBON	22K	5%	1/6W
R325	1-247-891-00	CARBON MELF	330K	5%	1/5W
R326	1-247-815-00	CARBON MELF	220	5%	1/5W
R401	1-247-791-00	CARBON MELF	22	5%	1/5W
R402	1-247-855-00	CARBON	10K	5%	1/6W
R403	1-247-855-00	CARBON MELF	10K	5%	1/5W
R501	1-247-831-00	CARBON MELF	1K	5%	1/5W
R502	1-247-831-00	CARBON MELF	1K	5%	1/5W
R503	1-247-831-00	CARBON MELF	1K	5%	1/5W
R504	1-247-831-00	CARBON MELF	1K	5%	1/5W

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
R505	1-247-831-00	CARBON MELF	1K	5%	1/5W
R506	1-247-831-00	CARBON MELF	1K	5%	1/5W
R507	1-247-831-00	CARBON MELF	1K	5%	1/5W
R508	1-247-831-00	CARBON MELF	1K	5%	1/5W
R509	1-247-879-00	CARBON MELF	100K	5%	1/5W
R510	1-247-831-00	CARBON MELF	1K	5%	1/5W
R511	1-247-831-00	CARBON MELF	1K	5%	1/5W
R512	1-247-831-00	CARBON MELF	1K	5%	1/5W
R513	1-247-855-00	CARBON MELF	10K	5%	1/5W
R514	1-247-831-00	CARBON MELF	1K	5%	1/5W
R515	1-247-831-00	CARBON MELF	1K	5%	1/5W
R516	1-247-831-00	CARBON MELF	1K	5%	1/5W
R517	1-247-831-00	CARBON MELF	1K	5%	1/5W
R518	1-247-831-00	CARBON MELF	1K	5%	1/5W
R519	1-247-903-00	CARBON MELF	1M	5%	1/5W
R520	1-247-903-00	CARBON MELF	1M	5%	1/5W
R521	1-247-903-00	CARBON MELF	1M	5%	1/5W
R522	1-247-903-00	CARBON MELF	1M	5%	1/5W
R523	1-247-903-00	CARBON MELF	1M	5%	1/5W
R524	1-247-903-00	CARBON MELF	1M	5%	1/5W
R525	1-247-903-00	CARBON MELF	1M	5%	1/5W
R526	1-247-903-00	CARBON MELF	1M	5%	1/5W
R527	1-247-903-00	CARBON MELF	1M	5%	1/5W
R528	1-247-903-00	CARBON MELF	1M	5%	1/5W
R529	1-247-903-00	CARBON MELF	1M	5%	1/5W
R530	1-247-903-00	CARBON MELF	1M	5%	1/5W
R531	1-247-903-00	CARBON MELF	1M	5%	1/5W
R532	1-247-903-00	CARBON MELF	1M	5%	1/5W
R533	1-247-809-00	CARBON MELF	120	5%	1/5W
R534	1-247-855-00	CARBON MELF	10K	5%	1/5W
R535	1-247-863-00	CARBON MELF	22K	5%	1/5W
R536	1-247-903-00	CARBON MELF	1M	5%	1/5W
R537	1-247-879-00	CARBON MELF	100K	5%	1/5W
R538	1-247-855-00	CARBON MELF	10K	5%	1/5W
R539	1-247-879-00	CARBON MELF	100K	5%	1/5W
R540	1-247-903-00	CARBON MELF	1M	5%	1/5W
R541	1-247-807-00	CARBON MELF	100	5%	1/5W
R542	1-247-879-00	CARBON MELF	100K	5%	1/5W
R543	1-247-879-00	CARBON MELF	100K	5%	1/5W
R544	1-247-879-00	CARBON MELF	100K	5%	1/5W
R545	1-247-903-00	CARBON MELF	1M	5%	1/5W
R546	1-247-903-00	CARBON MELF	1M	5%	1/5W
R547	1-247-883-00	CARBON MELF	150K	5%	1/5W
R548	1-247-879-00	CARBON MELF	100K	5%	1/5W
R549	1-247-831-00	CARBON MELF	1K	5%	1/5W

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
R550	1-247-807-00	CARBON MELF	100	5%	1/5W
R551	1-247-879-00	CARBON MELF	100K	5%	1/5W
R552	1-247-879-00	CARBON MELF	100K	5%	1/5W
R553	1-247-879-00	CARBON MELF	100K	5%	1/5W
R554	1-247-879-00	CARBON MELF	100K	5%	1/5W
R555	1-247-883-00	CARBON MELF	150K	5%	1/5W
R556	1-247-903-00	CARBON MELF	1M	5%	1/5W
R557	1-247-903-00	CARBON MELF	1M	5%	1/5W
R558	1-247-831-00	CARBON MELF	1K	5%	1/5W
R559	1-247-831-00	CARBON MELF	1K	5%	1/5W
R560	1-247-831-00	CARBON MELF	1K	5%	1/5W
R601	1-247-831-00	CARBON MELF	1K	5%	1/5W
R602	1-247-843-00	CARBON	3.3K	5%	1/6W
R603	1-247-839-00	CARBON MELF	2.2K	5%	1/5W
R604	1-247-831-00	CARBON MELF	1K	5%	1/5W
R605	1-247-843-00	CARBON MELF	3.3K	5%	1/5W
R606	1-247-843-00	CARBON MELF	3.3K	5%	1/5W
R607	1-247-867-00	CARBON MELF	33K	5%	1/5W
R608	1-247-855-00	CARBON MELF	10K	5%	1/5W
R609	1-247-839-00	CARBON MELF	2.2K	5%	1/5W
R610	1-247-838-00	CARBON MELF	120K	5%	1/5W
R611	1-247-831-00	CARBON MELF	1K	5%	1/5W
R612	1-247-871-00	CARBON MELF	47K	5%	1/5W
R613	1-247-823-00	CARBON	470	5%	1/6W
R701	1-247-877-00	CARBON MELF	82K	5%	1/5W
R702	1-247-871-00	CARBON	47K	5%	1/6W
R703	1-247-871-00	CARBON	47K	5%	1/6W
R704	1-247-831-00	CARBON MELF	1K	5%	1/5W
S1	1-570-056-11	SWITCH, SLIDE (TONE)			
S301	1-554-222-00	SWITCH, SLIDE (AM ATT)			
S302	1-554-222-00	SWITCH, SLIDE (MAIN POWER)			
S501	1-554-061-00	SWITCH, SLIDE (LOCK-SLOW-FAST)			
S502	1-554-061-00	SWITCH, SLIDE (POWER)			
T1	1-426-136-00	TRANSFORMER, HF			
T2	1-459-572-11	COIL (WITH CORE)			
T3	1-459-574-11	COIL (WITH CORE)			
T301	1-426-194-11	TRANSFORMER, HIGH-FREQUENCY			
T701	1-406-129-11	COIL			
TH	1-806-716-00	THERMISTOR			
VR1	1-230-652-11	RES, VAR, SLIDE 20K (AM RF GAIN)			
VR2	1-230-607-11	RES, VAR, SLIDE 20K (VOLUME)			
VT1	1-226-773-00	RES, ADJ, METAL GLAZE 22K (SSB)			
VT2	1-226-773-00	RES, ADJ, METAL GLAZE 22K (UPPED/LOWER)			

ELECTRICAL PARTS

Ref.No.	Part No.	Description
X1	1-567-050-31	FILTER, CERAMIC
X2	1-567-386-11	OSCILLATOR, CRYSTAL
X3	1-567-385-11	OSCILLATOR, CRYSTAL
X501	1-567-098-00	VIBRATOR, CRYSTAL
X601	1-567-387-11	VIBRATOR, CERAMIC

ACCESSORY & PACKING MATERIAL

Part No.	Description
⚠1-463-330-00	(US).........ADAPTOR, AC: AC-120W
⚠1-463-331-11	(Canadian)...ADAPTOR, AC: AC-120W
⚠1-463-373-XX	(EXCEPT US,Canadian AUS) ...ADAPTOR, AC: AC-140W
⚠1-463-633-00	(UK).........ADAPTOR, AC: AC-140W
1-504-059-11	MAGNETIC EARPHONE(ME-20H)
1-557-787-11	CONNECTOR, CONNECTION
*3-307-051-01	CARDBOARD (A)
3-701-617-00	BAG, POLYETHYLENE, STANDARD
3-701-622-01	(E,AEP,UK)...BAG, PLASTIC
3-887-278-00	(US,Canadian)...BOOK, RADIO WAVE GUIDE
3-887-285-04	(E(MIDDLE EASTS(EXCEPT ISRAEL),SAUDI ARABIA)...BOOK, RADIO GUIDE
3-887-291-01	SHEET, PROTECTION
3-893-802-01	(E(EXCEPT ISRAEL),AEP,UK,AUS)...BOOK, GUIDE, WAVE
3-894-549-01	BELT, CARRYING
3-894-555-01	(US,Canadian,AU)...HOLDER, ACCESSORY
3-894-556-01	(E(EXCEPT MIDDLE EASTS AND SAUDI ARABIA) ...INDIVIDUAL CARTON
3-894-557-02	CUSHION
3-894-558-01	SHEET, MEMORANDUM
3-894-567-01	SHEET, INFORMATION
3-894-568-01	(US,Canadian)...INDIVIDUAL CARTON
3-894-569-01	(AEP,UK,E)......INDIVIDUAL CARTON
3-894-577-01	(EXCEPT US,Canadian,AUS)..HOLDER, ACCESSORY
3-894-592-01	SPACER (INITIAL SETS ONLY)
3-990-021-11	(AEP(EXCEPT FEDERAL REPUBLIC OF GERMANY), UK,AUS)...MANUAL, INSTRUCTION
3-990-021-21	(US,Canadian)...MANUAL, INSTRUCTION
3-990-021-41	(AEP)..........MANUAL, INSTRUCTION
3-990-021-51	(E(MIDDLE EASTS,SAUDE ARABIA))...MANUAL, INSTRUCTION
3-993-317-21	(US,Canadian)...INSTRUCTION
X-3891-802-0	ANTENNA ASSY, WIRE, AM
X-3891-802-0	ANTENNA, WIRE (AM)

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une trame et une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

NOTES ON SERVICE

The replacement IC CX7961 for IC4 and IC6 has come to supply-end, so IC CX7961A is available instead of CX7961. When replacing IC4 and/or IC6, following modifications should be performed.

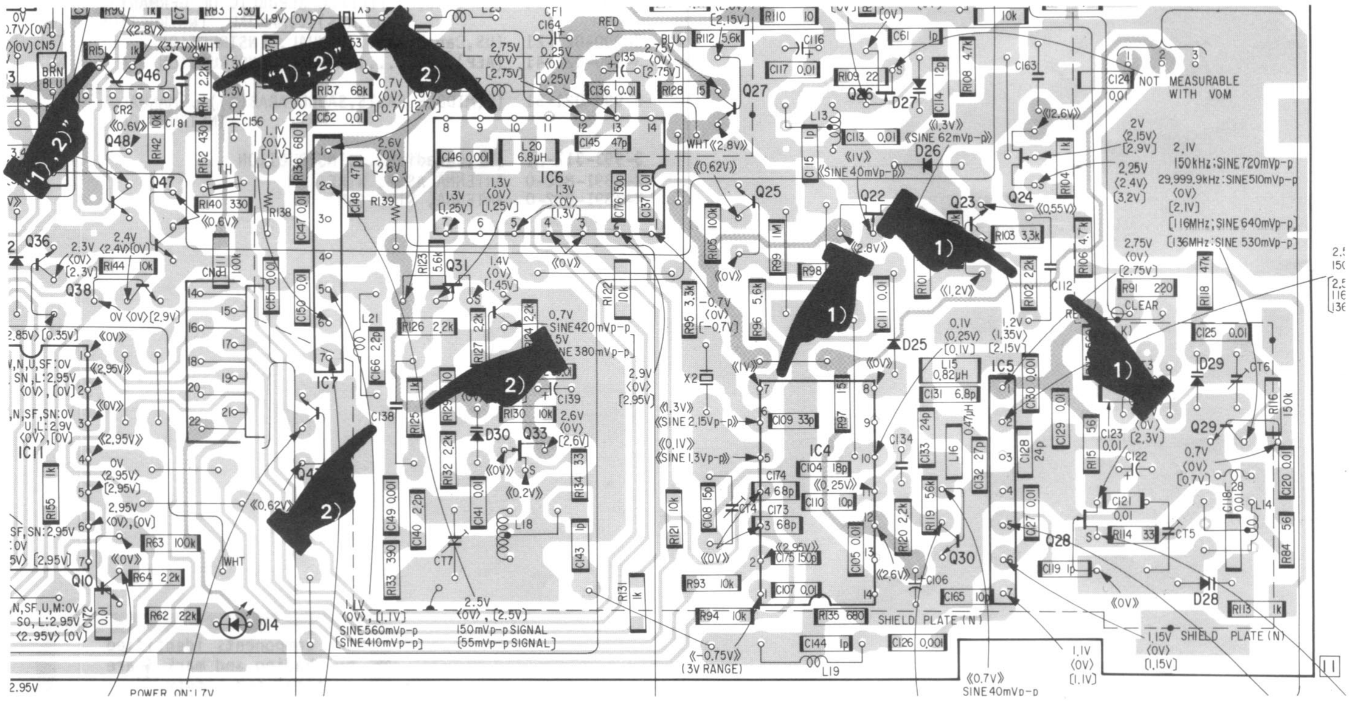
	Former	New
Type No.	CX7961	CX7961A
Part No.	8-757-961-00	8-757-961-10

Modification

1) **When replacing IC4, modify as follows.**
   - C112 1μF/16V → 0.056μF/50V: 1-136-162-00 (METALIZED FILM)
   - R102 2.2kΩ → 15kΩ: 1-249-431-11 (CARBON, SMALL)
   - R151 1.0kΩ → 220Ω: 1-249-409-11 (CARBON, SMALL)
   - Add a 3.3μF/4V capacitor (C181) paralleled with R141.: 1-135-103-00 (CRIP, TANTAL ELECT)
2) **When replacing IC6, modify as follows.**
   - C138 0.82μF/16V → 0.056μF/50V: 1-136-162-00 (METALIZED FILM)
   - R125 1.0kΩ → 5.6kΩ: 1-249-426-00 (CARBON, SMALL)
   - R151 1.0kΩ → 220Ω : 1-247-815-00 (CARBON, SMALL)
   - Add a 3.3μF/4V capacitor (C181) paralleled with R141.: 1-135-103-00

– PARTS LOCATION –

[MAIN BOARD]


"1), 2)"
"1), 2)"
2)
2)
2)
1)
1)
1)
IC4
IC5
IC6
IC7
IC11
C181
R141
R151
C112
R102
C138
R125
NOT MEASURABLE WITH VOM
SHIELD PLATE (N)
POWER ON:1.7V

Sony Corporation

Printed in Japan

© 1985. 3